

**ENVIRONMENTAL ASSESSMENT (EA)**

**BIRD DAMAGE MANAGEMENT  
IN THE  
NEW MEXICO WILDLIFE SERVICES PROGRAM**

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## TABLE OF CONTENTS

1.0	CHAPTER 1: PURPOSE OF AND NEED FOR ACTION	1 - 1
1.1	INTRODUCTION	1 - 1
1.2	PURPOSE	1 - 1
1.3	NEED FOR ACTION	1 - 2
1.3.1	Summary of Proposed Action	1 - 2
1.3.2	Need for Bird Damage Management to Protect Human Health and Safety	1 - 2
1.3.3	Need for bird damage management at airports.	1 - 5
1.3.4	Need for Bird Damage Management at Cattle Feeding and Dairy Cattle Facilities	1 - 5
1.3.5	Need for sandhill crane and goose damage management to protect agriculture	1 - 9
1.3.5.1	Middle Rio Grande Valley Crane and Goose Damage Management	1 - 9
1.3.5.2	Need for Other Crane and Goose Damage Management	1 - 10
1.3.6	Need for bird damage management of agricultural crops in other areas.	1 - 10
1.3.7	Need for bird damage management to protect property.	1 - 10
1.3.8	Need for bird damage management to protect aquaculture.	1 - 11
1.3.9	Need for bird damage management to protect wildlife including T&E species.	1 - 11
1.4	RELATIONSHIP OF THIS ENVIRONMENTAL ASSESSMENT TO OTHER ENVIRONMENTAL DOCUMENTS	1 - 12
1.5	DECISION TO BE MADE	1 - 12
1.6	SCOPE OF THIS ENVIRONMENTAL ASSESSMENT ANALYSIS	1 - 12
1.6.1	Actions Analyzed.	1 - 12
1.6.2	Period for Which this EA is Valid.	1 - 12
1.6.3	Site Specificity.	1 - 12
1.7	AUTHORITY AND COMPLIANCE	1 - 13
1.7.1	Authority of Federal and State Agencies in Bird Damage Management in New Mexico	1 - 13
1.7.1.1	WS Legislative Mandate	1 - 13
1.7.1.3	New Mexico Department of Game and Fish (NMGF)	1 - 14
1.7.1.4	U.S. Fish and Wildlife Service (USFWS)	1 - 14
1.7.2	COMPLIANCE WITH OTHER FEDERAL LAWS.	1 - 14
1.7.2.1	National Environmental Policy Act (NEPA)	1 - 14
1.7.2.2	Endangered Species Act (ESA)	1 - 14
1.7.2.3	Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711; 40 Stat. 755), as amended.	1 - 14
1.7.2.4	Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)	1 - 15
1.7.2.5	National Historic Preservation Act (NHPA) of 1966 as amended	1 - 15
2.0	CHAPTER 2 - ISSUES	2 - 1
2.1	ISSUES.	2 - 1
2.2	ISSUES ADDRESSED IN THE ANALYSIS OF ALTERNATIVES	2 - 1
2.2.1	Effects on Target Bird Species Populations	2 - 1
2.2.2	Effects on Nontarget Species populations, including T&E Species	2 - 1
2.2.3	Effects on Human Health and Safety	2 - 2
2.2.3.1	Safety and efficacy of chemical control methods.	2 - 2
2.2.3.2	Impacts on human safety of nonchemical BDM methods	2 - 2
2.2.3.3	Impacts on human safety of not conducting BDM to reduce disease outbreaks and bird strike hazards at airports	2 - 2

2.2.4	Effects on Aesthetics . . . . .	2 - 2
2.2.4.1	Effects on Human Affectionate-Bonds with Individual Birds and on Aesthetic Values of Wild Bird Species . . . . .	2 - 2
2.2.4.2	Effects on Aesthetic Values of Property Damaged by Birds . . . . .	2 - 3
2.1.5	Humaneness and Animal Welfare Concerns of Methods Used by WS. . . . .	2 - 3
2.3	ISSUES CONSIDERED BUT NOT IN DETAIL WITH RATIONALE . . . . .	2 - 4
2.3.1.	Appropriateness of Preparing an EA (Instead of an EIS) For Such a Large Area. . . . .	2 - 4
2.3.2	Impacts of hazing programs on livestock . . . . .	2 - 5
2.3.3	Impacts on sandhill crane and waterfowl hunting . . . . .	2 - 5
2.3.4	WS's impact on biodiversity . . . . .	2 - 5
2.3.5	Wildlife damage is a cost of doing business -- a "Threshold of Loss" should be established before allowing any lethal bird damage management. . . . .	2 - 5
2.3.6	Wildlife damage management should not occur at taxpayer expense, but should be fee based. . . . .	2 - 6
2.3.7	American Indian and Cultural Resource Concerns . . . . .	2 - 6
2.3.8	Environmental Justice and Executive Order 12898 . . . . .	2 - 6
2.3.9	Lethal BDM for blackbirds and starlings is futile because 50-60% of them die each year anyway. . . . .	2 - 7
2.3.10	Cost Effectiveness of BDM. . . . .	2 - 7
2.3.11	Protection of Children from Environmental Health and Safety Risks (Executive Order 13045). . . . .	2 - 8
3.0	CHAPTER 3: ALTERNATIVES INCLUDING THE PROPOSED ACTION . . . . .	3 - 1
3.1	DESCRIPTION OF THE ALTERNATIVES . . . . .	3 - 1
3.1.1	Alternative 1 - Continue the Current Federal BDM Program (No Action/Proposed Action). . . . .	3 - 1
3.1.2	Alternative 2 - Nonlethal BDM Only By WS. . . . .	3 - 2
3.1.3	Alternative 3 - Technical Assistance Only. . . . .	3 - 2
3.1.4	Alternative 4 - No Federal WS BDM. . . . .	3 - 2
3.2	BDM STRATEGIES AND METHODOLOGIES AVAILABLE TO WS IN NEW MEXICO . . . . .	3 - 2
3.2.1	Integrated Wildlife Damage Management (IWDM). . . . .	3 - 2
3.2.2	The IWDM Strategies That WS Employs. . . . .	3 - 3
3.2.2.1	Technical Assistance Recommendations. . . . .	3 - 3
3.2.2.2	Direct Damage Management Assistance. . . . .	3 - 3
3.2.2.3	Examples of WS Direct Operational and Technical Assistance in BDM in New Mexico. . . . .	3 - 3
3.2.3	WS Decision Making. . . . .	3 - 6
3.2.4	Bird Damage Management Methods Available for Use. . . . .	3 - 6
3.2.4.1	Nonchemical, Nonlethal Methods . . . . .	3 - 6
3.2.4.2	Chemical, Nonlethal Methods . . . . .	3 - 7
3.2.4.3	Mechanical, Lethal Methods. . . . .	3 - 7
3.2.4.4	Chemical, Lethal Methods. . . . .	3 - 8
3.2.4.4	Mechanical, Lethal Methods . . . . .	3 - 8
3.2.5	ALTERNATIVE 2 - Nonlethal BDM Only By WS . . . . .	3 - 8
3.2.6	ALTERNATIVE 3 - Technical Assistance Only . . . . .	3 - 9
3.2.7	ALTERNATIVE 4 - No Federal WS Bird Damage Management . . . . .	3 - 9
3.3	Alternatives Considered But Not Analyzed in Detail With Rationale . . . . .	3 - 9
3.3.1	Lethal BDM Only By WS . . . . .	3 - 9
3.3.2	Compensation for Bird Damage Losses . . . . .	3 - 10

3.3.3	Short Term Eradication and Long Term Population Suppression . . . . .	3 - 10
3.3.4	Use of bird-proof feeders in lieu of lethal control at dairies and cattle feeding facilities . . . . .	3 - 11
3.4	Mitigation and Standard Operating Procedures for Bird Damage Management Techniques . .	3 - 12
3.4.1	Mitigation in Standard Operating Procedures (SOPs) . . . . .	3 - 12
3.4.2	Additional Mitigation Specific to the Issues . . . . .	3 - 13
4.0	CHAPTER 4: ENVIRONMENTAL CONSEQUENCES . . . . .	4 - 1
4.1	Environmental Consequences for Issues Analyzed in Detail . . . . .	4 - 1
4.1.1	Effects on Target Species Bird Populations . . . . .	4 - 1
4.1.1.1	Alternative 1 - Continue the Current Federal Bird Damage Management Program . . . . .	4 - 1
4.1.1.2	Alternative 2 - Nonlethal BDM Only by WS . . . . .	4 - 7
4.1.1.3	Alternative 3 - Technical Assistance Only . . . . .	4 - 7
4.1.1.4	Alternative 4 - No Federal WS BDM . . . . .	4 - 7
4.1.2	Effects on Nontarget Species Populations, including Threatened and Endangered Species. . . . .	4 - 8
4.1.2.1	Alternative 1 - Continue the Current Federal Bird Damage Management Program . . . . .	4 - 8
4.1.2.2	Alternative 2 - Nonlethal BDM Only by WS . . . . .	4 - 11
4.1.2.3	Alternative 3 - Technical Assistance Only . . . . .	4 - 12
4.1.2.4	Alternative 4 - No Federal WS Bird Damage Management . . . . .	4 - 12
4.1.3	Effects on Human Health and Safety . . . . .	4 - 12
4.1.3.1	Impacts of chemical BDM methods on human health by Alternative . . . . .	4 - 12
	Alternative 1 - Continue the Current Program (Proposed Action) . . . . .	4 - 12
	Alternative 2 - Nonlethal BDM Only by WS . . . . .	4 - 14
	Alternative 3 - Technical Assistance Only . . . . .	4 - 15
	Alternative 4 - No Federal WS Bird Damage Management . . . . .	4 - 15
4.1.3.2	Impacts on human safety of nonchemical BDM methods by Alternative . . . . .	4 - 15
	Alternative 1 - Continue the Current Program (Proposed Action) . . . . .	4 - 15
	Alternative 2 - No Federal WS Bird Damage Management . . . . .	4 - 16
	Alternative 3 - Technical Assistance Only . . . . .	4 - 16
	Alternative 4 - Nonlethal Required Before Lethal . . . . .	4 - 16
4.1.3.3	Effects on human health by nuisance birds for which BDM is requested by Alternative . . . . .	4 - 16
	Alternative 1 - Continue the Current Program (Proposed Action) . . . . .	4 - 16
	Alternative 2 - Nonlethal BDM Only by WS . . . . .	4 - 17
	Alternative 3 - Technical Assistance Only . . . . .	4 - 17
	Alternative 4 - No Federal WS Bird Damage Management . . . . .	4 - 18
4.1.4	Effects on Aesthetics . . . . .	4 - 18
4.1.4.1	Effects on Human Affectionate-Bonds with Individual Birds and on Aesthetic Values of Wild Bird Species . . . . .	4 - 18
	Alternative 1 - Continue the Current Program (Proposed Action) . . . . .	4 - 18
	Alternative 2 - Nonlethal BDM Only by WS . . . . .	4 - 19
	Alternative 3 - Technical Assistance Only . . . . .	4 - 19
	Alternative 4 - No Federal WS Bird Damage Management . . . . .	4 - 19
4.1.4.2	Effects on Aesthetic Values of Property Damaged by Birds . . . . .	4 - 19
	Alternative 1 - Continue the Current Program (Proposed Action) . . . . .	4 - 19
	Alternative 2 - Nonlethal BDM Only by WS . . . . .	4 - 20

	Alternative 3 - Technical Assistance Only .....	4 - 20
	Alternative 4 — No Federal WS Bird Damage Management .....	4 - 20
4.1.5	Humaneness of lethal bird control methods .....	4 - 20
4.1.5.1	Alternative 1 - Continue the Current Program (Proposed Action) .....	4 - 20
4.1.5.2	Alternative 2 - Nonlethal BDM Only by WS .....	4 - 21
4.1.5.3	Alternative 3 - Technical Assistance Only .....	4 - 21
4.1.5.4	Alternative 4 - No Federal WS Bird Damage Management .....	4 - 22
5.0	CHAPTER 5 - LIST OF PREPARERS AND PERSONS CONSULTED .....	5 - 1
5.1	List of Preparers/Reviewers .....	5 - 1
5.2	List of Persons Consulted .....	5 - 1
APPENDIX A -- LITERATURE CITED .....		A - 1
APPENDIX B -- Bird Damage Management (BDM) Methods Available		
For Use or Recommendation by The New Mexico Wildlife Services Program .....		B - 1

## 1.0 CHAPTER 1: PURPOSE OF AND NEED FOR ACTION

### 1.1 Introduction

USDA/APHIS/ Wildlife Services (WS)<sup>1</sup> is authorized by Congress to manage a program to reduce human/wildlife conflicts. WS's mission is to "provide leadership in wildlife damage management in the protection of America's agricultural, industrial and natural resources, and to safeguard public health and safety." This is accomplished through:

- A) training of wildlife damage management professionals;
- B) development and improvement of strategies to reduce economic losses and threats to humans from wildlife;
- C) collection, evaluation, and dissemination of management information;
- D) cooperative wildlife damage management programs;
- E) informing and educating the public on how to reduce wildlife damage and;
- F) providing data and a source for limited-use management materials and equipment, including pesticides (USDA 1989).

This Environmental Assessment (EA) evaluates ways by which this responsibility can be carried out to resolve conflicts with bird species in New Mexico.

WS is a cooperatively funded and service oriented program. Before any operational wildlife damage management is conducted, *Agreements for Control* or *WS Work Plans* must be completed by WS and the land owner/administrator. WS cooperates with private property owners and managers and with appropriate land and wildlife management agencies, as requested, with the goal of effectively and efficiently resolving wildlife damage problems in compliance with all applicable federal, state, and local laws.

Individual actions on the types of sites encompassed by this analysis are categorically excluded under the APHIS Implementing Regulations for compliance with the National Environmental Policy Act (NEPA) (7 CFR 372.5(c)). APHIS Implementing Regulations also provide that all technical assistance furnished by WS is categorically excluded (7 CFR 372.5(c)) (60 Federal Register 6,000, 6,003 (1995)). Although bird damage management is a relatively minor component of the New Mexico WS program, WS has decided to prepare this EA to assist in planning bird damage management (BDM) activities and to clearly communicate with the public the analysis of cumulative impacts for a number of issues of concern in relation to alternative means of meeting needs for such management in the State. This analysis covers WS's plans for current and future BDM actions wherever they might be requested within the State of New Mexico.

### 1.2 Purpose

The purpose of this EA is to analyze the effects of WS activities in New Mexico to manage damage caused by bird species or species groups that include, but are not necessarily limited to, the following: European starlings (*Sturnus vulgaris*), blackbirds (the blackbird group), feral domestic pigeons (*Columbia livia*), ravens (*Corvus corax* and *C. cryptoleucus*), crows (*C. brachyrhynchos*), magpies (*Pica pica*), woodpeckers (family *Picidae*), sandhill cranes (*Grus canadensis*), geese (family *Anatidae*, subfamily *Anserinae*), ducks (family *Anatidae*, subfamily *Anatinae*), coots (*Fulica americana*), swallows (family *Hirundinidae*), house or English sparrows (*Passer domesticus*), raptors (including hawks, vultures) (order *Falconiformes*). Resources protected by such activities include agricultural

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<sup>1</sup>As of August 1, 1997, the name of the USDA, APHIS Animal Damage Control (ADC) Program was changed to Wildlife Services (WS). All references to WS are considered synonymous to WS.

crops, turf, livestock feed, livestock, livestock health, property, threatened and endangered species, other wildlife, aquaculture, and human health and safety. Hereinafter, blackbirds refers to the blackbird group as described in the FEIS prepared by the WS program (USDA 1994). The blackbird group comprises the Subfamily Icterinae, including red-winged (*Agelaius phoeniceus*), tricolored (*A. tricolor*), rusty (*Euphagus carolinus*), brewer's (*E. cyanocephalus*), and yellow-headed blackbirds (*Xanthocephalus xanthocephalus*); brown-headed cowbird (*Molothrus ater*) and bronzed cowbird (*Tangavius aeneus*); and great-tailed grackle (*Cassidix mexicanus*), and common grackle (*Quiscalus quiscula*).

### 1.3 Need For Action

#### 1.3.1 Summary of Proposed Action

The proposed action is to continue the current portion of the WS program in New Mexico that responds to requests for BDM to protect human health and safety, agricultural crops, turf, livestock feed, livestock, livestock health, property, threatened and endangered species, other wildlife, and aquaculture in the State of New Mexico. A major component of BDM in the NM WS program has the goal of minimizing loss or the risk of loss of agricultural crops from wintering sandhill crane and geese damage in the [REDACTED]. The program would also operate to reduce or minimize the loss of livestock feed and the risk of bird-related livestock health problems presented by starlings and blackbirds at requesting dairies and feedlots, and to meet requests to minimize damage or the risk of damage to agriculture, other wildlife species, property, human health and safety, or other resources caused by birds. To meet these goals WS would have the objective of responding to all requests for assistance with, at a minimum, technical assistance or self-help advice, or, where appropriate and when cooperative or congressional funding is available, direct control assistance in which professional WS Specialists conduct damage management actions. An Integrated Wildlife Damage Management (IWDM) approach would be implemented which would allow use of any legal technique or method, used singly or in combination, to meet requestor needs for resolving conflicts with birds. Agricultural producers and others requesting assistance would be provided with information regarding the use of effective nonlethal and lethal techniques. Lethal methods used by WS would include shooting, trapping, egg addling/destruction, DRC-1339 (Starlicide), Avitrol, or euthanasia following live capture by trapping or use of the tranquilizer alpha-chlorolose (A-C). Nonlethal methods used by WS may include porcupine wire deterrents, wire barriers and deterrents, the tranquilizer A-C, chemical repellents (e.g., methyl anthranilate), and harassment. In many situations, the implementation of nonlethal methods such as exclusion-type barriers would be the responsibility of the requestor to implement. BDM by WS would be allowed in the State, when requested, on private property sites or public facilities where a need has been documented, upon completion of an *Agreement for Control*. All management actions would comply with appropriate federal, state, and local laws.

#### 1.3.2 Need for Bird Damage Management to Protect Human Health and Safety

Feral domestic pigeons and starlings have been suspected in the transmission of 29 different diseases to humans, (Rid-A-Bird 1978, Weber 1979, and Davis et.al. 1971). These include viral diseases such as meningitis and seven different forms of encephalitis; bacterial diseases such as erysipeloid, salmonellosis, paratyphoid, Pasteurellosis, and Listeriosis; mycotic (fungal) diseases such as aspergillosis, blastomycosis, candidiasis, cryptococcosis, histoplasmosis, and sarcosporidiosis; protozoal diseases such as American trypanosomiasis and toxoplasmosis; and rickettsial/chlamydial diseases such as chlamydiosis and Q fever. As many as 65 different diseases transmittable to humans or domestic animals have been associated with pigeons, starlings, and English sparrows (Weber 1979). Table 1-1 shows the more typical diseases affecting humans that can be transmitted by pigeons and starlings. In most cases in which human health concerns are a major reason for requesting BDM, no actual cases of bird transmission of disease to humans have been

proven to occur. Thus, it is the risk of disease transmission that is the primary reason for requesting and conducting BDM.

Many times, individuals or property owners that request assistance with feral domestic pigeon or nuisance blackbird or starling roost problems are concerned about potential disease risks but are unaware of the types of diseases that can be associated with these birds. In most such situations, BDM is requested because the mess associated with droppings left by concentrations of birds is aesthetically displeasing and can result in continual clean-up costs. Under the proposed action, WS could agree to assist in resolving these types of problems.

**Table 1-1. Information on some diseases transmittable to humans and livestock that are associated with feral domestic pigeons, starlings, and English sparrows. Information taken from Weber (1979).**

Disease	Human Symptoms	Potential for Human Fatality	Effects on Domestic Animals
Bacterial:			
erysipeloid	skin eruption with pain, itching; headaches, chills, joint pain, prostration, fever, vomiting	sometimes - particularly to young children, old or infirm people	serious hazard for the swine industry
salmonellosis	gastroenteritis, septicaemia, persistent infection	possible, especially in individuals weakened by other disease or old age	causes abortions in mature cattle, possible mortality in calves, decrease in milk production in dairy cattle
Pasteurellosis	respiratory infection, nasal discharge, conjunctivitis, bronchitis, pneumonia, appendicitis, urinary bladder inflammation, abscessed wound infections	rarely	may fatally affect chickens, turkeys and other fowl
Listeriosis	conjunctivitis, skin infections, meningitis in newborns, abortions, premature delivery, stillbirth	sometimes - particularly with newborns	In cattle, sheep, and goats, difficulty swallowing, nasal discharge, paralysis of throat and facial muscles
Viral:			
meningitis	inflammation of membranes covering the brain , dizziness, and nervous movements	possible — can also result as a secondary infection with listeriosis, salmonellosis, cryptococcosis	causes middle ear infection in swine, dogs, and cats
encephalitis (7 forms)	headache, fever, stiff neck, vomiting, nausea, drowsiness, disorientation	mortality rate for eastern equine encephalomyelitis may be around 60%	may cause mental retardation, convulsions and paralysis
Mycotic (fungal):			



aspergillosis	affects lungs and broken skin, toxins poison blood, nerves, and body cells	not usually	causes abortions in cattle
blastomycosis	weight loss, fever, cough, bloody sputum and chest pains.	rarely	affects horses, dogs and cats
candidiasis	infection of skin, fingernails, mouth, respiratory system, intestines, and urogenital tract	rarely	causes mastitis, diarrhea, vaginal discharge and aborted fetuses in cattle
cryptococcosis	lung infection, cough, chest pain, weight loss, fever or dizziness, also causes meningitis	possible especially with meningitis	chronic mastitis in cattle, decreased milk flow and appetite loss
histoplasmosis	pulmonary or respiratory disease. May affect vision	possible, especially in infants and young children or if disease disseminates to the blood and bone marrow	actively grows and multiplies in soil and remains active long after birds have departed
Protozoal:			
American trypanosomiasis	infection of mucous membranes of eyes or nose, swelling	possible death in 2-4 weeks	caused by the conenose bug found on pigeons
toxoplasmosis	inflammation of the retina, headaches, fever, drowsiness, pneumonia, strabismus, blindness, hydrocephalus, epilepsy, and deafness	possible	may cause abortion or still birth in humans, mental retardation
Rickettsial/Chlamy dial:			
chlamydiosis	pneumonia, flu-like respiratory infection, high fever, chills, loss of appetite, cough, severe headaches, generalized aches and pains, vomiting, diarrhea, hepatitis, insomnia, restlessness, low pulse rate	occasionally, restricted to old, weak or those with concurrent diseases	in cattle, may result in abortion, arthritis, conjunctivitis, and enteritis
Q fever	sudden pneumonitis, chills, fever, weakness, severe sweating, chest pain, severe headaches and sore eyes	possible	may cause abortions in sheep and goats

Another type of human safety problem that has occurred with birds in New Mexico is attacks on people by nesting raptor species. A nesting pair of Cooper's hawks (*Accipiter cooperii*) in ██████████ County repeatedly attacked a local resident and his family members when they tried to use their back yard during two consecutive nesting seasons. In the first season, WS personnel resolved

the problem by coordinating the hand capture of the nestlings which were transferred to a wildlife rehabilitator to be raised in captivity. In the following season the birds continued to attack the residents. One of the adults was captured with the assistance of a licensed falconer and relocated to 80 miles to another river drainage. Four chicks were hand captured and placed with a wildlife rehabilitator to be raised by foster Cooper's hawk parents. The other adult left the area and neither adult returned, solving the problem. In another incident, nesting Mississippi kites (*Ictinia mississippiensis*) were attacking golfers at a golf course in [REDACTED]. An adult kite was captured and released a distance away, and 5 nestlings were hand captured and transferred to other active kite nests near Roswell with the cooperation of [REDACTED] officials. The attacks stopped at the golf course area and the problem was resolved.

### **1.3.3 Need for bird damage management at airports.**

The risk that birds pose to aircraft is well documented with the worst case reported in Boston in 1960 when 62 people were killed in the crash of an airliner which collided with a flock of starlings (Terres 1980). In FY 96, WS was contacted after a private jet departing from the [REDACTED] struck a flock of horned larks and one of the engines ingested several birds causing the engine to fail. The jet returned to the airport safely but the damaged engine valued at \$500,000 had to be replaced. WS personnel recommended a harassment program with pyrotechnics and propane cannons. The airport also applied for a U.S. Fish and Wildlife Service (USFWS) permit to shoot horned larks to reinforce harassment techniques.

Another example of the need for this type of BDM is the [REDACTED] which has historically requested WS assistance in reducing the strike hazard caused by feral domestic pigeons and other bird species. The Federal Aviation Administration conducted an inspection at the airport in early 1999 and concluded that pigeons presented a strike hazard to aircraft which also poses a safety hazard to pilots, crews, and passengers, as well as people on the ground in nearby areas. WS could provide assistance in reducing the pigeon population as part of the strategy to reduce strike hazards at the airport.

WS does not receive many requests for assistance regarding bird damage management at airports in New Mexico. Nevertheless, these requests are considered serious because of the potential for loss of human life and because damage to aircraft can be extremely expensive. WS could provide operational BDM involving virtually any bird species that poses a strike hazard at the request of any aviation facility in the State.

### **1.3.4 Need for Bird Damage Management at Cattle Feeding and Dairy Cattle Facilities**

Blackbirds, starlings, English sparrows, and, to a lesser extent, feral domestic pigeons and crows often cause damage at cattle feeding facilities and dairies by congregating in large numbers to feed on the grain component of cattle feed. The birds also cause damage by defecating on fences, shade canopy structures, and other structures, which can accelerate corrosion of metal components and which generally is considered an unsightly nuisance and potential health hazard for the feedlot/dairy operators and their personnel.

Contribution of Livestock and Dairies to the Economy. Livestock and dairy production in New Mexico contributes substantially to local economies. In 1997, NM feedlots maintained 123,000 cattle and calves valued at \$81.2 million. There were 202,000 milk cows valued at \$13.3 million in the State, and New Mexico's dairy operators produced 4.01 billion lbs. of milk generating

\$526.7 million in producer gross income during 1997 (NMASS 1998).

Scope of Livestock Feed Losses. The problem of starling damage to livestock feed has been documented in France and Great Britain (Feare 1984), and in the United States (Besser et. al. 1968). The concentration of larger numbers of cattle eating huge quantities of feed in confined pens results in a tremendous attraction to starlings, blackbirds, and feral domestic pigeons. Diet rations for cattle contain all of the nutrients and fibre that cattle need, and are so thoroughly mixed that cattle are unable to select any one component over others. The basic constituent of most rations is silage and the high energy portion is usually provided as barley, which may be incorporated as whole grains, crushed or ground cereal. While cattle cannot select individual ingredients from that ration, starlings can and do select the barley, thereby altering the energetic value of the complete diet. The removal of this high energy fraction by starlings, is believed to reduce milk yields, weight gains, and is economically significant (Feare 1984). Glahn and Otis (1986) reported that starling damage was also associated with proximity to roosts, snow, and freezing temperatures and the number of livestock on feed.

The economic significance of feed losses to starlings has been demonstrated by Besser et. al (1968) who concluded that the value of losses in feedlots near Denver, Colorado was \$84 per 1,000 birds in 1967. Forbes (1995) reported starlings consume up to 50% of their body weight in feed each day. Glahn and Otis (1981) reported losses of 4.8 kg of pelletized feed consumed per 1,000 bird minutes. Glahn (1983) reported that 25.8% of farms in Tennessee experienced starling depredation problems of which 6.3% experienced significant economic loss. Williams (1983) estimated seasonal feed losses to five species of blackbirds (primarily brown-headed cowbirds) at one feedlot in south Texas at nearly 140 tons valued at \$18,000.

BDM at feedlots and dairies has been a very minor component of the NM WS program. Despite the size of the cattle feedlot and dairy industries in New Mexico, WS provided operational BDM assistance in response to only three requests for assistance at such facilities during the 3-year period of FY 96 through FY 98. The reasons for the low numbers of requests in New Mexico are not entirely clear but several possible reasons are (1) relatively lower numbers of wintering blackbirds and starlings in the major areas where feedlots/dairies occur in the State compared to other areas of the country, (2) more availability of natural foods because of lack of snow cover compared to more northern areas where bird damage is more severe (Besser et al. 1968), and (3) the number of dairies and feedlots in the State is perhaps high enough that bird damage is spread over many facilities so that few individual facilities experience intolerable bird levels. Despite the minor nature of this type of BDM in NM, the dairy industry is expanding in the State, and requests for BDM could increase in the future.

A large cattle feeding operation in the panhandle of Texas had upwards of 1,000,000 blackbirds and starlings using the facility per day. This estimate was made by trained WS field personnel. The operators had a similar facility that did not have bird damage problems. They reported that, based on a comparison of feed losses, livestock health problems (primarily coccidiosis), and water trough maintenance costs (continuous labor costs for cleaning bird droppings out of water troughs), bird damage was costing them about \$5,000/day (██████, WS, Canyon District, TX, pers. comm.).

An analysis of blackbird and starling depredation at 10 cattle feeding facilities in Arizona that used WS BDM services conservatively estimated that the value of feed losses on the 10 facilities would have been about \$120,000 without WS BDM services which cost approximately \$40,000/yr (USDA

1996).

Scope of Livestock Health Problems. A number of diseases that affect livestock have been associated with feral domestic pigeons, starlings, blackbirds, and English sparrows (Weber 1979). Transmission of diseases such as Transmissible Gastroenteritis Virus (TGE), Tuberculosis (TB), and Coccidiosis to livestock has been linked to migratory flocks of starlings and blackbirds. Estimates of the dollar value of this type of damage are not available. A consulting veterinarian for a large cattle feeding facility in Texas indicated problems associated with coccidiosis declined following reduction of starling and blackbird numbers using the facility (██████, WS, Canyon District, TX, pers. comm.). Table 1-2 summarizes some of these diseases and the problems they can cause.

**Table 1-2. Some diseases of livestock that have been linked to feral domestic pigeons, starlings, blackbirds, and/or English sparrows. Information from Weber (1979).**

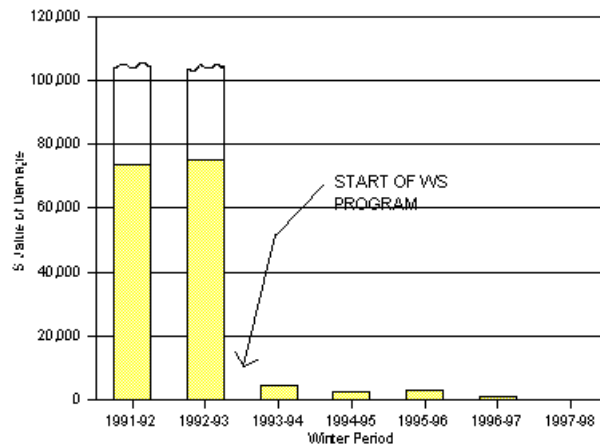
Disease	Livestock affected	Symptoms	Comments
Bacterial:			
erysipeloid	cattle, swine, horses, sheep, goats, chickens, turkeys, ducks	Pigs - arthritis, skin lesions, necrosis, septicemia Sheep - lameness	serious hazard for the swine industry, rejection of swine meat at slaughter due to septicemia, also affects dogs
salmonellosis	all domestic animals	abortions in mature cattle, mortality in calves, decrease in milk production in dairy cattle Colitis in pigs,	over 1700 serotypes
Pasteurellosis	cattle, swine, horses, rabbits, chickens, turkeys	Chickens and turkeys die suddenly without illness pneumonia, bovine mastitis, abortions in swine, septicemia, abscesses	also affects cats and dogs
avian tuberculosis	chickens, turkeys, swine, cattle, horses, sheep	Emaciation, decrease in egg production, and death in poultry. Mastitis in cattle	also affects dogs and cats
Streptococcosis	cattle, swine, sheep, horses, chickens, turkeys, geese, ducks, rabbits	Emaciation and death in poultry. Mastitis in cattle, abscesses and inflammation of the heart, and death in swine	feral pigeons are susceptible and aid in transmission
yersinosis	cattle, sheep, goats, horses, turkeys, chickens, ducks	abortion in sheep and cattle	also affects dogs and cats
vibriosis	cattle and sheep	In cattle, often a cause of infertility or early embryonic death. In sheep, the only known cause of infectious abortion in late pregnancy	of great economic importance

Listeriosis	Chickens, ducks, geese, cattle, horses, swine, sheep, goats	In cattle, sheep, and goats, difficulty swallowing, nasal discharge, paralysis of throat and facial muscles	also affects cats and dogs
Viral:			
meningitis	cattle, sheep, swine, poultry	inflammation of the brain, newborn calves unable to suckle	associated with listeriosis, salmonellosis, cryptococcosis
encephalitis (7 forms)	horses, turkeys, ducks	drowsiness, inflammation of the brain	mosquitos serve as vectors
Mycotic (fungal):			
aspergillosis	cattle, chickens, turkeys, and ducks	abortions in cattle	common in turkey poults
		Rarely	affects horses, dogs and cats
candidiasis	cattle, swine, sheep, horses, chickens, turkeys	In cattle, mastitis, diarrhea, vaginal discharge, and aborted fetuses	causes unsatisfactory growth in chickens
cryptococcosis	cattle, swine, horses	chronic mastitis in cattle, decreased milk flow and appetite loss	also affects dogs and cats
histoplasmosis	horses cattle and swine	(in dogs) chronic cough, loss of appetite, weakness, depression, diarrhea, extreme weight loss	also affects dogs; actively grows and multiplies in soil and remains active long after birds have departed
Protozoal:			
Coccidiosis	poultry, cattle, and sheep	bloody diarrhea in chickens, dehydration, retardation of growth	almost always present in English sparrows; also found in pigeons and starlings
American trypanosomiasis	infection of mucous membranes of eyes or nose, swelling	possible death in 2-4 weeks	caused by the conenose bug found on pigeons
toxoplasmosis	cattle, swine, horses, sheep, chickens, turkeys	In cattle, muscular tremors, coughing, sneezing, nasal discharge, frothing at the mouth, prostration and abortion	also affects dogs and cats
Rickettsial/Chlamydial:			
chlamydiosis	cattle, horses, swine, sheep, goats, chickens, turkeys, ducks, geese	In cattle, abortion, arthritis, conjunctivitis, enteritis	also affects dogs and cats and many wild birds and mammals
Q fever	affects cattle, sheep, goats, and poultry	may cause abortions in sheep and goats	can be transmitted by infected ticks

### 1.3.5 Need for sandhill crane and goose damage management to protect agriculture

#### 1.3.5.1 [REDACTED] Crane and Goose Damage Management

Damage to agricultural crops including alfalfa, chile, wheat, permanent pasture, and silage in the [REDACTED] by wintering sandhill cranes, and, to a lesser degree, snow geese (*Chen caerulescens*), became a substantial issue of concern among many agricultural producers in the area by the mid-1980s. Wintering populations of these two species had increased from about 7,000 and 5,000, respectively in the late 1960s, to about 21,000 and 43,000, respectively, in 1998 (data from J. Taylor, USFWS, pers. comm. 1998). Damage caused by these species in the area was estimated by WS personnel to have reached a peak of more than \$100,000 per year prior to 1994. This was based on confirmed and reported damage to WS totaling more than \$73,000 in 1992 and more than \$75,000 in 1993, and on the fact that many producers did not contact or request assistance from WS at that time which meant that the confirmed/reported damage totals were lower than actual. A congressional directive in 1993 directed WS to provide operational BDM services to [REDACTED] agricultural producers. Figure 1-1 shows the trend in estimated value of damage by cranes and geese in the [REDACTED] from 1991 through 1998; it indicates



**Figure 1-1.** Value of damage to crops by sandhill cranes and geese in the [REDACTED] central New Mexico during the winters of 1991-92 through 1998. Yellow bars show value of damage reported to or confirmed by WS. Damage data for 1991-92 and 1992-93 were incomplete because many farmers did not contact WS to report damage. The Congressionally directed WS operational program began in winter of 1993-94 and data during/after that time are believed to represent virtually all damage that occurred.

that the nonlethal damage management program by WS has been effective in reducing agricultural resource losses by more than 90%. A description of the [REDACTED] crane/goose damage management program is contained in Chapter 3.

#### 1.3.5.2 Need for Other Crane and Goose Damage Management

Sandhill cranes and snow geese also winter in other parts of New Mexico besides the [REDACTED],

primarily in southeastern New Mexico and along the Mexican border in south central New Mexico. They cause damage to crops and pastures similar to that which occurs in the [REDACTED], and WS occasionally receives requests for assistance in those areas. Most of the assistance provided outside the [REDACTED] is technical assistance which involves advice and loaning or sale of nonlethal bird scaring equipment and materials.

#### **1.3.6 Need for bird damage management of agricultural crops in other areas.**

Several studies have shown that blackbirds and starlings can pose a significant economic threat to agricultural producers (Besser et. al. 1968, Dolbeer et.al. 1978, and Feare 1984). Fruit or nut crops, especially pecans, can be severely damaged by blackbirds, crows, and ravens. Bird damage to crops has not been identified as a major problem in the State. Nevertheless, individual producers sometimes experience damage that they find unacceptable and seek assistance from WS. The NM WS program has responded to a variety of requests for assistance involving bird damage to crops. During FY 96, 97 and 98, WS documented birds as causing a total of \$2,900 in damage to milo, \$1,800 in damage to watermelons, \$1,100 in damage to pecans, apples valued at \$1,000, chili valued at \$400, and peanuts valued at \$250 in New Mexico. No estimates are currently available to determine the extent of these types of losses that would occur without some level of bird damage management.

#### **1.3.7 Need for bird damage management to protect property.**

Birds occasionally damage structures on private property or public facilities with fecal contamination. Accumulated bird droppings can reduce the functional life of some building roofs by 50% (Weber 1979). Woodpeckers sometimes cause structural damage to wood siding and stucco on homes. Corrosion damage to metal structures and painted finishes, including those on automobiles, can occur because of uric acid from bird droppings. Electrical utility companies frequently have problems with birds and other animals causing power outages by shorting out transformers and substations. Persons and businesses concerned about these types of damage may request WS assistance. The total value of property damage by birds reported to WS for the three-year period of FY 1996 - 1998 was more than \$603,000. However, nearly 83% of this total was for one incident involving a bird strike on an aircraft, which was estimated to cost about \$500,000 for replacement of a jet engine damaged by ingestion of horned larks.

WS has been contacted within the past several years by the [REDACTED] regarding excessive pigeon droppings under interstate highway overpasses in the Albuquerque area. They estimated their annual costs for cleaning up the mess were in excess of \$40,000. The Department has not thus far requested direct control assistance. WS could provide direct control service to the Department if requested.

Feral domestic and wild waterfowl sometimes congregate at golf courses, parks, and other recreational areas that have ponds or watercourses and cause damage by grazing on turf and by their deposition of droppings. Up to 500 American coots, several hundred domestic ducks, and, during the winter, 1000-2000 wild ducks have inhabited watercourses and grazed on fairways and greens at the [REDACTED]. The club's management estimated losses to the club because of this problem were about \$18,000 during 1997 and \$15,000 in 1998. Economic damage has been in the form of cleanup and restoration costs of greens and other turf areas and because of lost memberships which result in lost income to the club. Members and the club's management were also concerned about possible health hazards from exposure to the

droppings. WS has provided technical assistance to this facility and operational BDM assistance to haze wild ducks and to live-capture and remove nuisance coots from the area. Two EAs were previously prepared for this situation (USDA 1997d, 1998b). WS could be requested to provide BDM assistance on any of these types or similar types of areas in the State.

#### **1.3.8 Need for bird damage management to protect aquaculture.**

Aquaculture in New Mexico consists largely of sport fish production in hatcheries by state and federal fisheries management agencies such as the New Mexico Department of Game and Fish (NMGF) and the USFWS. Occasionally, fish-eating birds such as various species of herons and egrets (order *Ciconiiformes*, family *Ardeidae*), double-crested cormorants (*Phalacrocorax auritus*), herring gulls (*Larus argentatus*), ring-billed gulls (*Larus delawarensis*), ospreys (*Pandion haliaetus*), and others prey on young fry and fingerlings, adult fish ready for stocking, or brood fish at these fish rearing facilities. One NMGF hatchery recently reported mallard ducks, which are not normally associated with fish predation, consuming small trout fingerlings and fry valued at about \$200,000. In another incident, herring gulls were reported to be responsible for about \$20,000 in loss of small trout fingerlings and fry. Although not a widespread problem in the State, WS could be requested to assist in resolving such problems. In most cases like these, WS only provides advice (technical assistance) to the facility operators on how to resolve such problems through primarily nonlethal means such as barrier/deterrent wires or harassment. In some cases, the facility might need to obtain a depredation permit from the USFWS to kill a few of the birds to reinforce the remaining birds' fear of harassment and exclusionary techniques. Under the proposed action, WS could also be requested to provide on-site operational assistance involving the use of nonlethal and lethal means of resolving bird damage problems at these or similar facilities. Lethal methods would generally be restricted to taking only a few birds to reinforce the remaining birds' fear of harassment and exclusionary techniques.

#### **1.3.9 Need for bird damage management to protect wildlife including T&E species.**

Some of the species listed as threatened or endangered under the Endangered Species Act of 1973 are preyed upon or otherwise adversely affected by certain bird species. For example, nests of the endangered southwestern willow flycatcher (*Empidonax traillii extimus*) are frequently parasitized by brown-headed cowbirds (Brown 1994; USFWS 1995). The cowbirds lay their eggs in active nests of other bird species. The cowbird eggs hatch first and the young are cared for by the host bird as if they were its own. By the time the host birds' own eggs hatch, the cowbird young are larger and out-compete the host birds' young for food and frequently push them out of the nest. With endangered bird species, such parasitism can cause enough nest failures to jeopardize the host species. In 1998, the [REDACTED] requested assistance from WS to protect a single nest of the southwestern willow flycatcher from nest parasitism by brown-headed cowbirds. Recent discussions with the USFWS suggest they may recommend that WS conduct brownheaded cowbird population reduction in certain areas (e.g., at feedlots and roost locations) for the purpose of reducing nest parasitism.

Birds of prey, as well as mammalian carnivores, kill adult California least terns and their young and destroy nests in nesting colonies of this endangered species. The California WS program traps raptors in a number of these areas at the request of land managing agencies to protect this species and allow for successful reproduction.

Ravens sometimes kill endangered desert tortoises. In California and Utah, WS uses shooting and



DRC-1339 baits to remove depredating ravens at the request of other land or wildlife management agencies.

The above are just a few examples of BDM activities that WS could conduct under the proposed action to protect other wildlife species. In most cases, if such work is requested by another federal agency, NEPA responsibility rests with that agency. WS could, however, agree to prepare NEPA documentation for such activities if requested by the other federal agency.

#### **1.4 RELATIONSHIP OF THIS ENVIRONMENTAL ASSESSMENT TO OTHER ENVIRONMENTAL DOCUMENTS**

WS has issued a Final Environmental Impact Statement on the national APHIS/WS program (USDA 1994). This EA is tiered to the Final EIS. Pertinent information available in the FEIS has been incorporated by reference into this EA.

#### **1.5 DECISION TO BE MADE**

Based on the scope of this EA, the decisions to be made are:

- Should BDM as currently implemented by the WS program be continued in the State?
- If not, how should WS fulfill its legislative responsibilities for managing bird damage in the State?
- Might the continuing of WS's current program of BDM have significant impacts requiring preparation of an EIS?

#### **1.6 Scope Of This Environmental Assessment Analysis**

**1.6.1 Actions Analyzed.** This EA evaluates bird damage management by WS to protect human health and safety, agricultural crops, turf, livestock feed, livestock, livestock health, property, threatened and endangered species, other wildlife, and aquaculture on private land or public facilities within the State wherever such management is requested from the WS program.

**1.6.2 Period for Which this EA is Valid.** This EA will remain valid until WS determines that new needs for action or new alternatives having different environmental effects must be analyzed. At that time, this analysis and document will be reviewed and revised as necessary. This EA will be reviewed each year to ensure that it is complete and still appropriate to the scope of the State BDM activities.

**1.6.3 Site Specificity.** This EA analyzes potential impacts of WS's BDM activities that will occur or could occur at private property sites or at public facilities within New Mexico. Because the proposed action is to continue the current program, and because the current program's goal and responsibility is to provide service when requested within the constraints of available funding and personnel, it is conceivable that BDM activity by WS could occur anywhere in the State. Thus, this EA analyzes the potential impacts of such efforts wherever and whenever they might occur as part of the current program. The EA emphasizes significant issues as they relate to specific areas whenever possible. However, the issues that pertain to the various types of bird damage and resulting management are the same, for the most part, wherever they occur, and are treated as such. The standard WS Decision Model (Slate et al. 1992) and WS Directive 2.105 is the routine thought

process that is the site-specific procedure for determining methods and strategies to use or recommend for individual actions conducted by WS in the State (See USDA 1994, Chapter 2 and Appendix N for a more complete description of the WS Decision Model and examples of its application). Decisions made using this thought process will be in accordance with any mitigation measures and standard operating procedures described herein and adopted or established as part of the decision.

## **1.7 AUTHORITY AND COMPLIANCE**

### **1.7.1 Authority of Federal and State Agencies in Bird Damage Management in New Mexico<sup>2</sup>**

#### **1.7.1.1 WS Legislative Mandate**

The primary statutory authority for the WS program is the Animal Damage Control Act of 1931 (7 U.S.C. 426-426c; 46 Stat. 1468), which provides that:

*The Secretary of Agriculture is authorized and directed to conduct such investigations, experiments, and tests as he may deem necessary in order to determine, demonstrate, and promulgate the best methods of eradication, suppression, or bringing under control on national forests and other areas of the public domain as well as on State, Territory or privately owned lands of mountain lions, wolves, coyotes, bobcats, prairie dogs, gophers, ground squirrels, jackrabbits, brown tree snakes and other animals injurious to agriculture, horticulture, forestry, animal husbandry, wild game animals, furbearing animals, and birds, and for the protection of stock and other domestic animals through the suppression of rabies and tularemia in predatory or other wild animals; and to conduct campaigns for the destruction or control of such animals. Provided that in carrying out the provisions of this Section, the Secretary of Agriculture may cooperate with States, individuals, and public and private agencies, organizations, and institutions."*

Since 1931, with the changes in societal values, WS policies and programs place greater emphasis on the part of the Act discussing "*bringing (damage) under control*," rather than "*eradication*" and "*suppression*" of wildlife populations. In 1988, Congress strengthened the legislative mandate of WS with the Rural Development, Agriculture, and Related Agencies Appropriations Act. This Act states, in part:

*"That hereafter, the Secretary of Agriculture is authorized, except for urban rodent control, to conduct activities and to enter into agreements with States, local jurisdictions, individuals, and public and private agencies, organizations, and institutions in the control of nuisance mammals and birds and those mammal and bird species that are reservoirs for zoonotic diseases, and to deposit any money collected under any such agreement into the appropriation accounts that incur the costs to be available immediately and to remain available until expended for Animal Damage Control activities."*

#### **1.7.1.3 New Mexico Department of Game and Fish (NMGF)**

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<sup>2</sup> See Chapter 1 of USDA (1994) for a complete discussion of federal laws pertaining to WS.

The NMGF is responsible under Chapter 17, NMSA for managing most wildlife species in the State under the direction of the New Mexico State Game Commission. NMSA 17-2-13 prohibits trapping, killing or injuring songbirds that include “. . . perching birds which feed entirely or chiefly on insects.” The NMGF has issued a letter of authorization to WS which constitutes a permit to take state-protected bird species for depredation purposes. In addition, the NMGF has issued a letter of authorization to WS to allow for incidental take of state-protected species.

#### **1.7.1.4 U.S. Fish and Wildlife Service (USFWS)**

The USFWS is responsible for managing and regulating take of bird species that are listed as migratory under the Migratory Bird Treaty Act and those that are listed as threatened or endangered under the Endangered Species Act. Sections 1.7.2.2 and 1.7.2.3 below describe WS's interactions with the USFWS under these two laws.

### **1.7.2 COMPLIANCE WITH OTHER FEDERAL LAWS.**

Several other federal laws authorize, regulate, or otherwise affect WS wildlife damage management. WS complies with these laws, and consults and cooperates with other agencies as appropriate.

#### **1.7.2.1 National Environmental Policy Act (NEPA)**

WS prepares analyses of the environmental impacts of program activities to meet procedural requirements of this law. This EA meets the NEPA requirement for the proposed action in New Mexico. When WS operational assistance is requested by another federal agency, NEPA compliance is the responsibility of the other federal agency. However, WS could agree to complete NEPA documentation at the request of the other federal agency.

#### **1.7.2.2 Endangered Species Act (ESA)**

It is federal policy, under the ESA, that all federal agencies shall seek to conserve threatened and endangered (T&E) species and shall utilize their authorities in furtherance of the purposes of the Act (Sec.2(c)). WS conducts Section 7 consultations with the U.S. Fish & Wildlife Service (USFWS) to use the expertise of the USFWS to ensure that *"any action authorized, funded or carried out by such an agency . . . is not likely to jeopardize the continued existence of any endangered or threatened species . . . Each agency shall use the best scientific and commercial data available"* (Sec.7(a)(2)). WS obtained a Biological Opinion (B.O.) from USFWS in 1992 describing potential effects on T & E species and prescribing reasonable and prudent measures for avoiding jeopardy (USDA 1994, Appendix F). WS initiated formal consultation with the USFWS on several species not covered by the 1992 B.O. and the results of that consultation are pending. In addition, WS is in the process of initiating formal consultation at the programmatic level to reevaluate the 1992 B.O. and to fully evaluate potential effects on T&E species listed or proposed for listing since the 1992 FWS B.O.

#### **1.7.2.3 Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711; 40 Stat. 755), as amended.**

The Migratory Bird Treaty Act (MBTA) provides the USFWS regulatory authority to protect families of birds that contain species which migrate outside the United States. The law prohibits any *"take"* of these species by private entities, except as permitted by the USFWS; therefore the

USFWS issues permits to private entities for reducing bird damage. A litigation position issued in 1997 by the U.S. Justice Department (DOJ) is that federal agencies are not subject to the MBTA procedural requirements for permits. The Department of Interior Solicitor's Office interpreted this position to mean the USFWS is no longer authorized to issue permits to federal agencies for the take of migratory birds. WS's interim guidance subsequently has been to allow the conduct of actions that were previously covered by USFWS permits and to notify the USFWS when conducting BDM actions that involve species for which permits were formerly required to assure their concerns are considered. A more recent ruling by the U.S. District Court of Columbia conflicts with the DOJ position, and the USDA Office of General Council has advised WS to once again apply for and obtain MBTA permits. Unless and until further court rulings determine otherwise, WS will obtain MBTA permits covering BDM activities that involve the taking of species for which such permits are required in accordance with the MBTA and USFWS regulations, or will operate as a named agent on MBTA permits obtained by cooperators. WS has also received a letter of authorization covering intentional take of migratory birds for damage management purposes from the NMGF which regulates take of migratory birds protected by state law.

WS provides on-site assessments for persons experiencing migratory bird damage to obtain information on which to base damage management recommendations. Damage management recommendations could be in the form of technical assistance or operational assistance. In severe cases of bird damage, WS provides recommendations to the USFWS for the issuance of depredation permits to private entities. The ultimate responsibility for issuing such permits rests with the USFWS. Starlings, feral domestic pigeons, house sparrows and domestic waterfowl are not classified as protected migratory birds and therefore have no protection under this Act. USFWS depredation permits are also not required to kill yellow-headed, red-winged, rusty, and Brewer's blackbirds, cowbirds, all grackles, crows, and magpies found committing or about to commit depredation upon ornamental or shade trees, agricultural crops, livestock, or wildlife, or when concentrated in such numbers and manner as to constitute a health hazard or other nuisance (50 CFR 21.43).

#### **1.7.2.4 Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)**

FIFRA requires the registration, classification, and regulation of all pesticides used in the United States. The Environmental Protection Agency (EPA) is responsible for implementing and enforcing FIFRA. All chemical methods used or recommended by the WS program in New Mexico are registered with and regulated by the EPA and NMDA and are used by WS in compliance with labeling procedures and requirements.

#### **1.7.2.5 National Historic Preservation Act (NHPA) of 1966 as amended**

The National Historic Preservation Act (NHPA) of 1966, and its implementing regulations (36 CFR 800), requires federal agencies to: 1) determine whether activities they propose constitute "undertakings" that can result in changes in the character or use of historic properties and, 2) if so, to evaluate the effects of such undertakings on such historic resources and consult with the State Historic Preservation Office regarding the value and management of specific cultural, archaeological and historic resources, and 3) consult with appropriate American Indian Tribes to determine whether they have concerns for traditional cultural properties in areas of these federal undertakings. WS actions on tribal lands are only conducted at the tribe's request and under signed agreement; thus, the tribes have control over any potential conflict with cultural resources on tribal properties. WS activities as described under the proposed action do not cause ground disturbances

nor do they otherwise have the potential to significantly affect visual, audible, or atmospheric elements of historic properties and are thus not undertakings as defined by the NHPA. BDM could benefit historic properties if such properties were being damaged by birds. In those cases, the officials responsible for management of such properties would make the request and would have decision-making authority over the methods to be used. Harassment techniques that involve noise-making could conceivably disturb users of historic properties if they were used at or in close proximity to such properties; however, it would be an exceedingly rare event for noise-producing devices to be used in close proximity to such a property unless the resource being protected from bird damage was the property itself, in which case the primary effect would be beneficial. Also, the use of such devices is generally short term and could be discontinued if any conflicts with historic properties arose. WS has determined BDM actions are not undertakings as defined by the NHPA because such actions do not have the potential to result in changes in the character or use of historic properties. A copy of this EA is being provided to each American Indian tribe in the State to allow them opportunity to express any concerns that might need to be addressed prior to a decision.

## **2.0 CHAPTER 2 - ISSUES**

Chapter 2 contains a discussion of the issues, including issues that will receive detailed environmental impacts analysis in Chapter 4 (Environmental Consequences), issues that have driven the development of mitigation measures and/or standard operating procedures, and issues that will not be considered in detail, with rationale. Pertinent portions of the affected environment will be included in this chapter in the discussion of issues used to develop mitigation measures. Additional description of affected environments will be incorporated into the discussion of the environmental impacts in Chapter 4.

**2.1 Issues.** The following issues have been identified as areas of concern requiring consideration in this EA. These will be analyzed in detail in Chapter 4:

- Effects on Target Bird Species Populations
- Effects on Nontarget Species Populations, including T&E Species
- Effects on Human Health and Safety
- Effects on Aesthetics
- Humaneness of Lethal Bird Control Methods

## **2.2 ISSUES ADDRESSED IN THE ANALYSIS OF ALTERNATIVES**

### **2.2.1 Effects on Target Bird Species Populations**

A common concern among members of the public is whether wildlife damage management actions adversely affect the viability of target species populations. The target species selected for analysis in this EA are the primary ones which may be affected by WS's BDM activities in NM which are species of which more than just a few individuals would likely be killed by WS's use of lethal control methods under the proposed action in any one year. Those species include blackbird species, nonnative European starlings (a nonindigenous exotic), feral domestic pigeons (also a nonindigenous exotic), and American coots. Other species that have been killed in very low numbers include woodpeckers (only 1 was taken by WS in the 3-year period of FY 1996-1998), black-crowned night herons (4 were taken during that period) and English sparrows (75 were taken during that period). Also, there may be concerns about potential adverse impacts from WS's harassment of wintering sandhill cranes and snow geese in the Middle Rio Grande Valley, and this analysis will address those impacts as well.

### **2.2.2 Effects on Nontarget Species populations, including T&E Species**

A common concern among members of the public and wildlife professionals, including WS personnel, is the impact of damage control methods and activities on nontarget species, particularly Threatened and Endangered Species. WS's standard operating procedures include measures intended to mitigate or reduce the effects on nontarget species populations and are presented in Chapter 3.

Special efforts are made to avoid jeopardizing Threatened and Endangered Species through biological evaluations of the potential effects and the establishment of special restrictions or mitigation measures. WS has consulted with the USFWS under Section 7 of the Endangered Species Act (ESA) concerning potential impacts of BDM methods on T&E species and has obtained a Biological Opinion (B.O.). For the full context of the B.O., see Appendix F of the ADC FEIS (USDA 1994, Appendix F). WS is also in the process of reinitiating Section 7 consultation at the program level to assure that potential effects on T&E species have been adequately addressed.

In contrast to adverse impacts on nontarget animals from direct take by BDM methods, some nontarget species may actually benefit from BDM. Prime examples are the benefit to native cavity nesting bird species that results from any reduction in starling populations or the benefit to a number of bird species, including some T&E species, that results from reductions in populations of brown-headed cowbirds which parasitize nests of other birds.

## **2.2.3 Effects on Human Health and Safety**

### **2.2.3.1 Safety and efficacy of chemical control methods.**

WS has obtained input through telephone calls and letters from members of the public who have expressed concerns that chemical BDM methods should not be used because of potential adverse effects on people from being exposed to the chemicals directly or to birds that have died as a result of the chemical use. Under the alternatives proposed in this EA, the primary toxicant proposed for use by WS is DRC-1339 (Starlicide), which would be primarily used to remove feral domestic pigeons and starlings or blackbirds in damage situations. DRC-1339 use is regulated by the EPA through FIFRA, by New Mexico State Pesticide Control Laws, and by WS Directives. Another chemical method that could be used is Avitrol which is classified as an avian distressing agent and is normally used to avert certain bird species from using certain problem areas. Other chemicals available for use include the tranquilizer Alpha-chlorolose (for live-capturing nuisance waterfowl and pigeons) and methyl anthranilate (artificial grape flavoring, which also has bird repellent capabilities).

### **2.2.3.2 Impacts on human safety of nonchemical BDM methods**

Some people may be concerned that WS's use of firearms and pyrotechnic bird scaring devices could cause injuries to people. WS personnel occasionally use small caliber firearms or air rifles and shotguns to remove feral domestic pigeons that are causing damage, and could use such firearms to remove other kinds of birds in damage situations. There is some potential fire hazard to private property from pyrotechnic use. In 1997, a haystack caught fire allegedly due to pyrotechnics use to disperse sandhill cranes from crop fields in the [REDACTED].

### **2.2.3.3 Impacts on human safety of not conducting BDM to reduce disease outbreaks and bird strike hazards at airports**

The concern stated here is that the absence of adequate BDM would result in adverse effects on human health and safety, because the transmission of bird-borne diseases and bird strikes on aircraft would not be curtailed or reduced to the minimum levels possible and practical. Although WS does not receive many requests to conduct BDM for disease outbreaks or reduce hazards at airports, potential impacts of not conducting such work could lead to increased incidence of bird-borne diseases in humans, or injuries or loss of human lives from bird strikes to aircraft.

## **2.2.4 Effects on Aesthetics**

### **2.2.4.1 Effects on Human Affectionate-Bonds with Individual Birds and on Aesthetic Values of Wild Bird Species**

Some individual members or groups of wild and feral domestic bird species habituate and learn to live in close proximity to humans. Some people in these situations feed such birds and/or otherwise

develop emotional attitudes toward such animals that result in aesthetic enjoyment. In addition, some people consider individual wild birds as “pets,” or exhibit affection toward these animals. Examples would be people who visit a city park to feed waterfowl or pigeons and homeowners who have bird feeders or bird houses. Many people do not develop emotional bonds with individual wild animals, but experience aesthetic enjoyment from observing them.

Public reaction to damage management actions is variable because individual members of the public can have widely different attitudes toward wildlife. Some individuals that are negatively affected by wildlife support removal or relocation of damaging wildlife. Other individuals affected by the same wildlife may oppose removal or relocation. Individuals unaffected by wildlife damage may be supportive, neutral, or opposed to wildlife removal depending on their individual personal views and attitudes.

The public’s ability to view wild mammals or birds in a particular area would be more limited if the wildlife are removed or relocated. However, immigration of wildlife from other areas could possibly replace the animals removed or relocated during a damage management action. In addition, the opportunity to view or feed other wildlife would be available if an individual makes the effort to visit other parks or areas with adequate habitat and local populations of the species of interest.

Some people do not believe that sandhill cranes, geese, or nuisance blackbird or starling roosts should even be harassed to stop or reduce damage problems. Some of them are concerned that their ability to view wintering cranes and geese in the [REDACTED] is lessened by WS nonlethal harassment efforts.

#### **2.2.4.2 Effects on Aesthetic Values of Property Damaged by Birds**

Property owners that have pigeons roosting or nesting on their buildings or waterfowl grazing on turf areas are generally concerned about the negative aesthetic appearance of bird droppings and the damage to turf. Business owners generally are particularly concerned because negative aesthetics can result in lost business. Costs associated with property damage include labor and disinfectants to clean and sanitize fecal droppings, implementation of nonlethal wildlife management methods, loss of property use, loss of aesthetic value of flowers, gardens, and lawns consumed by geese, loss of customers or visitors irritated by the odor of or of having to walk on fecal droppings, repair of golf greens, replacing grazed turf, and loss of time contacting local health departments and wildlife management agencies on health and safety issues.

#### **2.1.5 Humaneness and Animal Welfare Concerns of Methods Used by WS.**

The issue of humaneness and animal welfare, as it relates to the killing or capturing of wildlife is an important but very complex concept that can be interpreted in a variety of ways. Schmidt (1989) indicated that vertebrate pest damage management for societal benefits could be compatible with animal welfare concerns, if “ . . . the reduction of pain, suffering, and unnecessary death is incorporated in the decision making process.”

Suffering is described as a “ . . . highly unpleasant emotional response usually associated with pain and distress.” However, suffering “ . . . can occur without pain . . . ,” and “ . . . pain can occur without suffering . . . ” (AVMA 1987). Because suffering carries with it the implication of a time frame, a case could be made for “ . . . little or no suffering where death comes immediately . . . ” (CDFG 1991), such as



shooting.

Defining pain as a component in humaneness of WS methods appears to be a greater challenge than that of suffering. Pain obviously occurs in animals. Altered physiology and behavior can be indicators of pain, and identifying the causes that elicit pain responses in humans would " . . . *probably be causes for pain in other animals* . . . " (AVMA 1987). However, pain experienced by individual animals probably ranges from little or no pain to significant pain (CDFG 1991).

Pain and suffering, as it relates to WS damage management methods, has both a professional and lay point of arbitration. Wildlife managers and the public would be better served to recognize the complexity of defining suffering, since " . . . *neither medical or veterinary curricula explicitly address suffering or its relief*" (CDFG 1991).

Therefore, humaneness, in part, appears to be a person's perception of harm or pain inflicted on an animal, and people may perceive the humaneness of an action differently. The challenge in coping with this issue is how to achieve the least amount of animal suffering within the constraints imposed by current technology and funding.

WS has improved the selectivity and humaneness of management techniques through research and development. Research is continuing to bring new findings and products into practical use. Until new findings and products are found practical, a certain amount of animal suffering could occur when some BDM methods are used in situations where nonlethal damage management methods are not practical or effective.

NM WS personnel are experienced and professional in their use of management methods so that they are as humane as possible under the constraints of current technology, workforce and funding. Mitigation measures/SOPs used to maximize humaneness are listed in Chapter 3.

## **2.3 ISSUES CONSIDERED BUT NOT IN DETAIL WITH RATIONALE**

### **2.3.1. Appropriateness of Preparing an EA (Instead of an EIS) For Such a Large Area.**

Some individuals might question whether preparing an EA for an area as large as New Mexico would meet the NEPA requirements for site specificity. Wildlife damage management falls within the category of federal or other agency actions in which the exact timing or location of individual activities cannot usually be predicted well enough ahead of time to accurately describe such locations or times in an EA or EIS. The WS program is analogous to other agencies or entities with damage management missions such as fire and police departments, emergency clean-up organizations, insurance companies, etc. Although WS can predict some of the possible locations or *types* of situations and sites where some kinds of wildlife damage will occur, the program cannot predict the specific locations or times at which affected resource owners will determine a bird damage problem has become intolerable to the point that they request assistance from WS. Nor would WS be able to prevent such damage in all areas where it might occur without resorting to destruction of wild animal populations over broad areas at a much more intensive level than would be desired by most people, including WS and state agencies. Such broadscale population control would also be impractical, if not impossible, to achieve.

If a determination is made through this EA that the proposed action would have a significant environmental impact, then an EIS would be prepared. In terms of considering cumulative impacts, one EA analyzing

impacts for the entire State may provide a better analysis than multiple EA's covering smaller zones.

### **2.3.2 Impacts of hazing programs on livestock**

Some individuals have raised concerns that noise from pyrotechnics used to harass birds could startle livestock and cause them to run through fences and be injured. One horse breeder has voiced concern that startling effects could adversely affect breeding success. WS's experience in using pyrotechnics have noted that in their experience, most animals habituate relatively easily to noises from the pyrotechnics. However, personnel avoid shooting pyrotechnics near identified livestock facilities where operators have expressed concerns.

### **2.3.3 Impacts on sandhill crane and waterfowl hunting**

Some individuals have expressed their concern that hazing patrols scare birds away from fields where hunters could have access to them during hunting seasons. It has also been suggested that use of the hovercraft to haze sandhill cranes at roosts on the [REDACTED] river may disrupt duck hunting opportunities along the river. As mitigation, WS personnel reduce sandhill crane hazing activities in fields just prior to hunts, and also provide information to hunters regarding where to find birds and which landowners welcome hunters. Hazing with the hovercraft generally occurs only once or twice during the winter when sandhill crane roosts build to significant numbers and cause damage problems on nearby farms. This low frequency of use means potential impacts on hunting should be minimal.

### **2.3.4 WS's impact on biodiversity**

The WS program does not attempt to eradicate any species of wildlife in New Mexico. WS operates in accordance with international, federal and state laws, and regulations enacted to ensure species viability. Impacts on target and nontarget species populations because of WS's lethal BDM activities are minor as shown in section 4.1. The impacts of the current WS program on biodiversity are not significant nationwide or statewide (USDA 1994). In the case of local populations of nonnative species such as feral domestic pigeons, the goal may be to eliminate a local population but because such species are not part of the mix of native wildlife species, they are not an essential component of the native biodiversity. Rarely, if ever, would BDM result in the long term local elimination of even these nonnative species, however.

### **2.3.5 Wildlife damage is a cost of doing business -- a "Threshold of Loss" should be established before allowing any lethal bird damage management.**

WS is aware that some people feel federal wildlife damage management should not be allowed until economic losses reach some arbitrary pre-determined threshold level. This type of policy, however, would be very difficult or inappropriate to apply to human health and safety situations. Although some damage can be tolerated by most resource owners, WS has the legal direction to respond to requests for wildlife damage management, and it is program policy to aid each requester with the goal of minimizing losses. WS uses the Decision Model thought process discussed in Chapter 3 to determine appropriate strategies.

In a ruling for Southern Utah Wilderness Alliance, et al. vs. Hugh Thompson, Forest Supervisor for the Dixie NF, et al., the United States District Court of Utah denied plaintiffs' motion for preliminary injunction. In part the court found that a forest supervisor need only show that damage from wildlife is threatened, to establish a need for wildlife damage management (Civil No. 92-C-0052A January 20, 1993). Thus, there is judicial precedence indicating that it is not necessary to establish a criterion such as percentage of loss of a particular resource to justify the need for wildlife damage management actions.

### **2.3.6 Wildlife damage management should not occur at taxpayer expense, but should be fee based.**

WS is aware of concerns that wildlife damage management should not be provided at the expense of the taxpayer or that it should be fee based. WS was established by Congress as the agency responsible for providing wildlife damage management to the people of the United States. Funding for WS comes from a variety of sources in addition to federal appropriations. Such nonfederal sources include State general appropriations, local government funds (county or city), livestock associations, Indian tribes, and private funds which are all applied toward program operations. Federal, state, and local officials have decided that WS should be conducted by appropriating funds. Additionally, wildlife damage management is an appropriate sphere of activity for government programs, since wildlife management is a government responsibility. A commonly voiced argument for publicly funded wildlife damage management is that the public should bear responsibility for damage to private property caused by public wildlife.

Although not required by law, it is current practice of the NM WS program to require service recipients in cooperating counties (i.e., those that contribute cooperative funding) to pay for the materials used in BDM activities. In noncooperating counties, recipients are required to pay 100% of the cost of providing the services of a field specialist as well as the cost of materials. Thus, BDM by WS is fee based to a high degree.

### **2.3.7 American Indian and Cultural Resource Concerns**

The National Historic Preservation Act (NHPA) of 1966, and its implementing regulations (36 CFR 800), requires federal agencies to: 1) determine whether activities they propose constitute "undertakings" that can result in changes in the character or use of historic properties and, 2) if so, to evaluate the effects of such undertakings on such historic resources and consult with the State Historic Preservation Office regarding the value and management of specific cultural, archaeological and historic resources, and 3) consult with appropriate American Indian Tribes to determine whether they have concerns for traditional cultural properties in areas of these federal undertakings. WS actions on tribal lands are only conducted at the tribe's request and under signed agreement; thus, the tribes have control over any potential conflict with cultural resources on tribal properties. In addition, the predecision EA was sent to all tribes in the State to solicit their review and comment prior to issuing a decision. WS BDM actions do not cause ground disturbances nor do they otherwise have the potential to affect visual, audible, or atmospheric elements of historic properties and are thus not undertakings as defined by the NHPA. Harassment techniques that involve noise-making could conceivably disturb users of historic properties if they were used at or in close proximity to such properties; however, it would be an exceedingly rare event for noise-producing devices to be used in close proximity to such a property unless the resource being protected from bird damage was the property itself, in which case the primary effect would be beneficial. Also, the use of such devices is generally short term and could be discontinued if any conflicts arose with the use of historic properties.

### **2.3.8 Environmental Justice and Executive Order 12898 - *"Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations."***

Environmental Justice (EJ) is a movement promoting the fair treatment of people of all races, income levels and cultures with respect to the development, implementation and enforcement of environmental laws, regulations and policies. EJ, also known as Environmental Equity, has been defined as the pursuit of equal justice and equal protection under the law for all environmental statutes and regulations without discrimination based on race, ethnicity, or socioeconomic status.

EJ is a priority both within APHIS and WS. Executive Order 12898 requires Federal agencies to make EJ

part of their mission, and to identify and address disproportionately high and adverse human health and environmental effects of Federal programs, policies and activities on minority and low-income persons or populations. APHIS plans to implement Executive Order 12898 principally through its compliance with the provisions of NEPA.

All WS activities are evaluated for their impact on the human environment and compliance with Executive Order 12898 to insure EJ. WS personnel use wildlife damage management methods as selectively and environmentally conscientiously as possible. It is not anticipated that the proposed action would result in any adverse or disproportionate environmental impacts to minority and low-income persons or populations.

### **2.3.9 Lethal BDM for blackbirds and starlings is futile because 50-60% of them die each year anyway.**

Because natural mortality in blackbirds populations is 50 - 65% per year (see section 4.1.1.1), some persons argue that this shows lethal BDM actions are futile. However, the rate of natural mortality has little or no relationship to the effectiveness of lethal BDM because natural mortality generally occurs randomly throughout a population and throughout the course of a year. Natural mortality is too gradual in individual concentrations of depredating birds to adequately reduce the damage that such concentrations are causing. It is probable that mortality caused by BDM actions is not additive to natural mortality but merely displaces it (known as “compensatory” mortality). In any event, it is apparent that the rate of mortality from BDM is well below the extent of any natural fluctuations in overall annual mortality and is, therefore, insignificant to regional populations. The objective of lethal BDM in New Mexico is not to necessarily add to overall blackbird or starling mortality, which would be futile under current funding limitations, but to redirect mortality to a segment of the population that is causing damage in order to realize benefits during the current production season. The resiliency of these bird populations does not mean individual BDM actions are not successful in reducing damage, but that periodic and recurring BDM actions are necessary in many situations.

### **2.3.10 Cost Effectiveness of BDM.**

Perhaps a better way to state this issue is by the question “Does the value of damage avoided equal or exceed the cost of providing BDM?” The Council on Environmental Quality (CEQ) regulations (40 CFR 1502.23) do not require a formal, monetized cost-benefit analysis to comply with NEPA. Consideration of this issue is not essential to making a reasoned choice among the alternatives being considered. The ADC EIS, Appendix L, p. 32 (USDA 1994) stated:

Cost effectiveness is not, nor should it be, the primary goal of the APHIS ADC program. Additional constraints, such as environmental protection, land management goals, and others, are considered whenever a request for assistance is received. These constraints increase the cost of the program while not necessarily increasing its effectiveness, yet they are a vital part of the APHIS ADC program.

An analysis of cost-effectiveness in many BDM situations is exceedingly difficult if not impossible to perform because the value of benefits is not readily determined. For example, the potential benefit of eliminating feral domestic pigeons from roosting and nesting around heating and cooling structures on a school or hospital could be reduced incidence of illness among an unknown number of building users. Since some of the bird-borne diseases described in Chapter 1 are potentially fatal or severely debilitating, the value of the benefit may be high. However, no studies of disease problems with and without BDM have been conducted, and, therefore, the number of cases *prevented* by effective BDM is not possible to estimate. Also,

it is rarely possible to conclusively prove that birds are responsible for individual disease cases or outbreaks.

An evaluation of cost-effectiveness for perhaps the major component of the NM WS BDM program is possible. Figure 1-1 in Section 1.3.3.1 showed that crop losses to cranes and geese in the [REDACTED] were probably over \$100,000 per year before the implementation of WS's nonlethal integrated program which costs about \$60,000 per year. Losses in the area are now only a few thousand dollars per year suggesting that avoided losses exceed costs by a factor of about 1.6 to 1.

The WS program in Arizona prepared an analysis of cost vs. avoided loss for feedlot and dairy operations that received BDM service. The analysis indicated that the value of feed saved from blackbird and starling damage by BDM with DRC-1339 exceeds the cost of the service by a factor of 3 to 1, without considering other benefits such as prevention of disease transmission, restored weight gain performance, and milk yields (USDA 1996). A similar analysis in Idaho yielded a ratio of avoided losses to cost of about 4 to 1 (USDA 1998a). Although not available for New Mexico feedlots and dairies because this type of BDM has been extremely limited, the AZ and ID analyses indicate blackbird and starling control at dairies and feedlots is cost-effective.

#### **2.3.11 Protection of Children from Environmental Health and Safety Risks (Executive Order 13045).**

Children may suffer disproportionately from environmental health and safety risks for many reasons. Predator damage management as proposed in this EA would only involve legally available and approved damage management methods in situations or under circumstances where it is highly unlikely that children would be adversely affected. Therefore, implementation of the proposed action would not increase environmental health or safety risks to children.

### **3.0 CHAPTER 3: ALTERNATIVES INCLUDING THE PROPOSED ACTION**

Alternatives analyzed in detail are:

- 1) Alternative 1 - Continue the Current Federal BDM Program. This is the Proposed Action as described in Chapter 1 and is the “No Action” alternative as defined by the Council on Environmental Quality for analysis of ongoing programs or activities.
- 2) Alternative 2 - Nonlethal BDM Only By WS
- 3) Alternative 3 - Technical Assistance Only. Under this alternative, WS would not conduct any direct operational BDM activities in New Mexico. If requested, affected producers would be provided with technical assistance information only.
- 4) Alternative 4 - No Federal WS BDM. This alternative consists of no federal BDM program by WS.

### **3.1 DESCRIPTION OF THE ALTERNATIVES**

#### **3.1.1 Alternative 1 - Continue the Current Federal BDM Program (No Action/Proposed Action).**

The No Action alternative is a procedural NEPA requirement (40 CFR 1502), is a viable and reasonable alternative that could be selected, and serves as a baseline for comparison with the other alternatives. The No Action alternative, as defined here, is consistent with the Council on Environmental Quality’s (CEQ’s) definition (CEQ 1981).

The proposed action is to continue the current portion of the WS program in New Mexico that responds to requests for BDM to protect human health and safety, agricultural crops, turf, livestock feed, livestock, livestock health, property, threatened and endangered species, other wildlife, and aquaculture in the State of New Mexico. A major component of the current program is using nonlethal harassment as part of an integrated strategy to minimize damage or the risk of damage to agricultural crops from wintering sandhill crane and geese damage in the [REDACTED]. The program would also operate to reduce or minimize the loss of livestock feed and the risk of bird-related livestock health problems presented by starlings and blackbirds at requesting dairies and feedlots, and to meet requests to minimize damage or the risk of damage to agriculture, other wildlife species, property, human health and safety, or other resources caused by birds. To meet these goals WS would have the objective of responding to all requests for assistance with, at a minimum, technical assistance or self-help advice, or, where appropriate and when cooperative or congressional funding is available, direct damage management assistance in which professional WS Specialists conduct damage management actions. An Integrated Wildlife Damage Management (IWDM) approach would be implemented which would allow use of any legal technique or method, used singly or in combination, to meet requestor needs for resolving conflicts with birds. Agricultural producers and others requesting assistance would be provided with information regarding the use of effective nonlethal and lethal techniques. Lethal methods used by WS would include shooting, trapping, egg addling/destruction, DRC-1339 (Starlicide), Avitrol, or euthanasia following live capture by trapping, hand capture, nets, or use of the tranquilizer alpha-chlorolose (A-C). Nonlethal methods used by WS may include porcupine wire deterrents, wire barriers and deterrents, the tranquilizer A-C, chemical repellents (e.g., methyl anthranilate), and harassment. In many situations, the implementation of nonlethal methods such as exclusion-type barriers would be the responsibility of the requestor to implement which means that, in those situations, WS only function would be to implement lethal methods if determined to be

necessary. BDM by WS would be allowed in the State, when requested, on private property sites or public facilities where a need has been documented, upon completion of an *Agreement for Control*. All management actions would comply with appropriate federal, state, and local laws. Appendix B provides a more detailed description of the methods that could be used under the proposed action.

### **3.1.2 Alternative 2 - Nonlethal BDM Only By WS.**

This alternative would require WS to use nonlethal methods only to resolve bird damage problems. The current program of crane and goose damage management in the [REDACTED] would continue as is under this alternative. Persons receiving technical assistance could still resort to lethal methods that were available to them. Currently, DRC-1339 and alpha-chloralose are only available for use by WS employees. Therefore, use of these chemicals by private individuals would be illegal. Appendix B describes a number of nonlethal methods available for use by WS under this alternative.

### **3.1.3 Alternative 3 - Technical Assistance Only.**

This alternative would not allow for WS operational BDM in New Mexico. WS would only provide technical assistance and make recommendations when requested. The operational crane and goose damage management program by WS in the [REDACTED] would end under this alternative. Producers, property owners, agency personnel, or others could conduct BDM using traps, shooting, Avitrol, or any nonlethal method that is legal. Avitrol could only be used by State certified pesticide applicators. Currently, DRC-1339 and alpha-chloralose are only available for use by WS employees. Therefore, use of these chemicals by private individuals would be illegal. Appendix B describes a number of methods that could be employed by private individuals or other agencies after receiving technical assistance advice under this alternative.

### **3.1.4 Alternative 4 - No Federal WS BDM.**

This alternative would eliminate Federal involvement in BDM in New Mexico. WS would not provide direct operational or technical assistance and requesters of WS services would have to conduct their own BDM without WS input. The operational crane and goose damage management program by WS in the [REDACTED] would end under this alternative. Information on BDM methods development would still be available to producers and property owners. DRC-1339 and alpha-chloralose are only available for use by WS employees. Therefore, use of these chemicals by private individuals would be illegal. Avitrol could be used by State certified restricted-use pesticide applicators.

## **3.2 BDM STRATEGIES AND METHODOLOGIES AVAILABLE TO WS IN NEW MEXICO**

The strategies and methodologies described below include those that could be used or recommended under Alternatives 1, 2 and 3 described above. Alternative 4 would terminate both WS technical assistance and operational BDM by WS. Appendix B is a more thorough description of the methods that could be used or recommended by WS.

### **3.2.1 Integrated Wildlife Damage Management (IWDM).**

The most effective approach to resolving wildlife damage is to integrate the use of several methods simultaneously or sequentially. The philosophy behind IWDM is to implement the best combination of

effective management methods in a cost-effective<sup>3</sup> manner while minimizing the potentially harmful effects on humans, target and nontarget species, and the environment. IWDM may incorporate cultural practices (i.e., animal husbandry), habitat modification (i.e., exclusion), animal behavior modification (i.e., scaring), removal of individual offending animals, local population reduction, or any combination of these, depending on the circumstances of the specific damage problem.

### **3.2.2 The IWDM Strategies That WS Employs.**

#### **3.2.2.1 Technical Assistance Recommendations.**

“Technical assistance” as used herein is information, demonstrations, and advice on available and appropriate wildlife damage management methods. The implementation of damage management actions is the responsibility of the requester. In some cases, WS provides supplies or materials that are of limited availability for non-WS entities to use. Technical assistance may be provided following a personal or telephone consultation, or during an on-site visit with the requester. Generally, several management strategies are described to the requester for short and long-term solutions to damage problems; these strategies are based on the level of risk, need, and the practicality of their application.

Under APHIS NEPA Implementing regulations and specific guidance for the WS program, WS technical assistance is categorically excluded from the need to prepare an EA or EIS. However, it is discussed in this EA because it is an important component of the IWDM approach to resolving bird damage problems.

#### **3.2.2.2 Direct Damage Management Assistance.**

This is the conduct or supervision of damage management activities by WS personnel. Direct damage management assistance may be initiated when the problem cannot effectively be resolved through technical assistance alone, and when *Agreements for Control* or other comparable instruments provide for WS direct damage management. The initial investigation defines the nature, history, extent of the problem, species responsible for the damage, and methods that would be available to resolve the problem. Professional skills of WS personnel are often required to effectively resolve problems, especially if restricted use pesticides are necessary, or if the problem is complex.

Except for the [REDACTED] crane and goose damage management program, in many, if not most, cases where WS direct BDM assistance is the implementation of lethal control or of capture methods

#### **3.2.2.3 Examples of WS Direct Operational and Technical Assistance in BDM in New Mexico.**

[REDACTED] ) Crane and Goose Damage Management Program. WS participates with the [REDACTED] in a coordinated strategy to reduce agricultural damage by cranes and geese in the [REDACTED]. The strategy is an Integrated Wildlife Damage Management approach in which a combination of lure crops on state and federal

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<sup>3</sup>The cost of management may sometimes be secondary because of overriding environmental, legal, human health and safety, animal welfare, or other concerns.



refuge areas, active harassment by WS personnel to scare birds from farm lands, and selective placement of sport hunters are all implemented in a coordinated way to minimize crane and goose damage to crops during the winter when migrant cranes and geese are present. The lure crops provide an attractive alternative food source for the birds to give them incentive to remain away from private crop fields. Methods used by WS personnel are nonlethal only and include harassment with pyrotechnics, propane cannons, and hovercraft (generally only once or twice per winter). During each of three weekend sport hunts for sandhill cranes, hunters are directed to farm lands that experience chronic crane damage and where the landowner has agreed to allow hunting. Although only a few cranes are killed by the hunters, the activity helps to reinforce the birds' fear of harassment techniques.

WS's current program utilizes two seasonal employees to conduct nonlethal harassment of cranes and geese from farm lands in the area from mid October thru late March or early April. In FY 98, WS had 86 agreements with landowners to allow harassment of cranes and geese from their fields in the [REDACTED]. Occasionally, visual scaring devices (flags or scarecrows) are used in specific hot-spot areas for short periods as an adjunct to active harassment. Cultural practices, outlined in 3.2.1, may also be recommended to individual farmers as part of the overall integrated damage reduction strategy. At times, sandhill cranes roost in large concentrations on sandbars in the [REDACTED] in close proximity to agricultural lands on which they cause damage during the day. A small hovercraft is sometimes used by WS personnel (generally only once or twice per winter) to harass and disperse these roosting concentrations.

**Feral Domestic Pigeon Problems.** Feral domestic pigeons are responsible for the majority of nuisance bird damage requests for assistance in NM. The most common situation with this species involves pigeons roosting and nesting on buildings and structures. The main nuisance problem is from the birds' droppings which cause an unsightly mess and result in clean-up costs. These problems are most frequently addressed by recommending exclusion devices/barriers (such as netting, hardware cloth, screen, porcupine wire) or habitat modification and local population reduction. Methods that could be used for population reduction include shooting with pellet rifles, low-velocity .22 caliber rifle rounds (that shoot bullets at about the same velocity as a pellet rifle), shotguns (mostly in rural or semi-rural situations), live capture with cage traps followed by euthanasia, DRC-1339 baiting, or Avitrol. Sometimes, pigeons captured in cage traps are supplied to local falconers who feed them to their hawks and falcons.

WS has been requested in the past to reduce local pigeon numbers in or at several cities and facilities around the state. These have included:

[REDACTED]



WS could be requested to conduct BDM at any of the above locations or any other similar locations in the State under the proposed action.

WS has been contacted by the [REDACTED] regarding excessive pigeon droppings under [REDACTED] in the Albuquerque area. The Department has not thus far requested direct control assistance. In analyzing alternatives for resolving the problem, WS estimated that installation of porcupine wire at 10 overpasses would cost about \$280,000 for material alone (not including installation and maintenance costs). The porcupine wire would also hinder access to the underside of the bridge structures by engineering inspectors. Thus, in this case, cost and safety inspection concerns rendered this nonlethal alternative impractical. WS could provide direct control service to the Department if requested.

WS expects to receive future requests from any or all of the above as well as other entities across the state and could respond with technical assistance, direct operational control, or a combination of both in any situation in the state.

**Nuisance Heron/Egret Rookeries.** Herons and egrets usually congregate into colonies of nesting adults called “rookeries” in the spring breeding season. These rookeries are generally established in areas of large trees near riparian areas or lakes. Occasionally they are established in areas of homes and businesses and cause problems because of the mess left by droppings and dropped and regurgitated prey items such as fish, crustaceans, frogs, and snakes.

During FY 96 - 98, WS had only one request for assistance with a nuisance heron rookery that involved black-crowned night herons. WS killed a total of 4 black-crowned night herons during that 3-year period to alleviate nuisance roost problems in residential areas. So far in FY 99, WS has had two requests for assistance in the State with this type of problem, both involving black-crowned night herons, and both have been handled with technical assistance. One of the requesters agreed with WS’s recommendation to do nothing for this season since the birds already had young in nests. They will contact WS for assistance next spring if the birds try to nest on their property at that time and have been advised that early harassment with pyrotechnics should be effective at resolving the problem. The other requestor successfully implemented pyrotechnics to scare the birds from the residential area prior to nesting.

In general, WS would not use any lethal controls on nuisance colonial waterbirds unless the damage situation was intolerable to the affected party, and, even then, the lethal take would be very limited. For example, the 4 black-crowned night herons that were killed were in a situation in which about 75 nesting pairs were in trees in a residential area. A small number of still flightless juvenile birds were roosting directly over one resident’s patio area. They and the adult birds were defecating and dropping/regurgitating prey items directly on patio furniture and the patio itself, rendering the site unusable. Harassment of these birds would have caused the young to fall to the

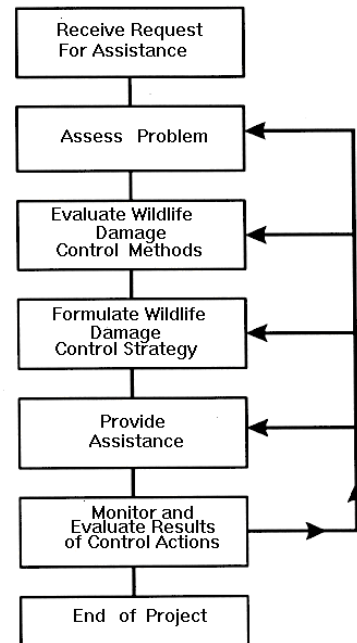
ground where they would likely have been killed by dog or cat predators or by vehicles. WS consulted with the USFWS migratory nongame bird coordinator who agreed that removal of the 4 juvenile birds by shooting was the most appropriate alternative. This was accomplished which resulted in the adults leaving the site along with cessation of the damage problem. The rest of the roosting/nesting birds were not disturbed, and the residents were advised to use pyrotechnics early the following spring before nesting if the adults came back. The residents contacted WS the following spring to notify that the roosting birds were not occupying their property any more. In this case, the problem was solved with minimal lethal control.

### 3.2.3 WS Decision Making.

WS personnel use a thought process for evaluating and responding to damage complaints that is depicted by the WS Decision Model described by Slate et al. (1992) (Figure 3-1). WS personnel are frequently contacted after requesters have tried or considered nonlethal methods and found them to be impractical, too costly, or inadequate for reducing damage to an acceptable level. WS personnel assess the problem, evaluate the appropriateness and availability (legal and administrative) of strategies and methods based on biological, economic and social considerations. Following this evaluation, the methods deemed to be practical for the situation are developed into a management strategy. After the management strategy has been implemented, monitoring is conducted and evaluation continues to assess the effectiveness of the strategy. If the strategy is effective, the need for further management is ended. In terms of the WS Decision Model (Slate et al. 1992), most damage management efforts consist of continuous feedback between receiving the request and monitoring the results of the damage management strategy. The Decision Model is not a documented process, but a mental problem-solving process common to most if not all professions.

### 3.2.4 Bird Damage Management Methods Available for Use. (See Appendix B for detailed descriptions of BDM Methodologies)

**Figure 3-1. APHIS, WS Decision Model**



#### 3.2.4.1 Nonchemical, Nonlethal Methods (See Appendix B for detailed descriptions)

**Agricultural producer and property owner practices** consist primarily of nonlethal preventive methods such as cultural methods<sup>4</sup> and habitat modification.

**Animal behavior modification** refers to tactics that alter the behavior of birds to reduce

<sup>4</sup>Generally involves modifications to the management of protected resources to reduce their vulnerability to wildlife damage..

damages. Some but not all of these tactics include:

- Exclusions such as netting
- Propane exploders (to scare birds)
- Pyrotechnics (to scare birds)
- Distress calls and sound producing devices (to scare birds)
- Visual repellents and scaring tactics

**Relocation** of damaging birds to other areas.

**Nest destruction** of the target species before eggs or young are in the nest.

**Habitat/environmental modification** to attract or repel certain bird species.

**Live traps** are various types of traps designed to capture birds alive for relocation or euthanasia. Some examples are: clover traps, decoy traps, nest box traps, mist nets, etc.

**Lure crops/alternate foods** are crops planted or other food resources provided to mitigate the potential loss of higher value crops.

#### **3.2.4.2 Chemical, Nonlethal Methods (See Appendix B for detailed descriptions)**

**Avitrol** is a chemical frightening agent registered for use on pigeons, crows, gulls, blackbirds, starlings, and English sparrows in various situations. This chemical works by causing distress behavior in the birds that consume treated kernels from a mixture of treated and untreated bait, which generally frightens the other birds from the site. Generally birds that eat the treated bait will die (Johnson and Glahn 1994).

**Alpha-chloralose** is used as an immobilizing agent, which is a central nervous system depressant, and used to capture waterfowl or other birds. It is generally used in recreational and residential areas, such as swimming pools, shoreline residential areas, golf courses, or resorts. Alpha-chloralose is typically delivered as a well contained bait in small quantities with minimal hazards to pets and humans; single bread or corn baits are fed directly to the target birds.

**Methyl Anthranilate (MA)** (artificial grape flavoring food additive) has been shown to be an effective repellent for many bird species, including waterfowl. It can be applied to turf or surface water or as a fog to repel birds from small areas. It may also become available for use as a livestock feed additive that has bird repellent value.

**Other repellents:** Other bird repellents that might become available include anthraquinone (Avery et al. 1997) and charcoal particles (e.g., adhered to livestock feed).

#### **3.2.4.3 Mechanical, Lethal Methods (See Appendix B for detailed descriptions)**

**Egg addling/destruction** is the practice of destroying the embryo in the egg prior to hatching; physically breaking eggs; or directly removing eggs from a nest and destroying them.

**Shooting** is the practice of selectively removing target birds by shooting with an air rifle, shotgun, or rifle. Shooting a few individuals from a larger flock can reinforce birds' fear of harassment techniques.

**Sport hunting** can be part of a BDM strategy to enhance the effectiveness of harassment techniques. For example, WS directs sport hunters licensed by the NMGF to areas where sandhill cranes cause damage.

**Snap traps** are modified rat traps that are used to remove individual birds such as woodpeckers causing damage to buildings.

#### **3.2.4.4 Chemical, Lethal Methods (See Appendix B for detailed descriptions)**

**DRC-1339** is a slow acting avicide for reducing damage from several species of birds, including blackbirds, starlings, pigeons, crows, ravens, magpies, and gulls. DRC-1339 is highly toxic to sensitive species but only slightly toxic to nonsensitive birds, predatory birds and mammals. This chemical would be the primary lethal chemical method used for feral domestic pigeon, starling, and blackbird damage management under the current program.

**Carbon dioxide (CO<sub>2</sub>) gas** is an American Veterinary Medical Association (AVMA) approved euthanasia method which is sometimes used to euthanize birds which are captured in live traps or by chemical immobilization and when relocation is not a feasible option. Live birds are placed in a container or chamber into which CO<sub>2</sub> gas is released. The birds quickly expire after inhaling the gas.

#### **3.2.4.4 Mechanical, Lethal Methods (See Appendix B for detailed descriptions)**

**Decoy and nest box traps** are sometimes used by WS to capture blackbirds and starlings. Decoy traps are set in limited numbers in selected locations where a resident population is causing localized damage or where other techniques cannot be used. Decoy traps are similar in design to the Australian Crow Trap as reported by Johnson and Glahn (1994) and McCracken (1972). Live decoy birds are placed in the trap with sufficient food and water to assure their survival. Feeding behavior and calls of the decoys attract other birds into the trap. Blackbirds and starlings taken in these traps are euthanized.

**Shooting** is more effective as a dispersal technique than as a way to reduce starling or blackbird numbers. The number that can be killed by shooting is generally very small in relation to the number involved in damage situations. Usually only a few dozen birds can be shot from individual flocks that can number anywhere from a few hundred to many thousands or hundreds of thousands before the rest of the birds become gun shy. Shooting, however, can be helpful in some situations to supplement and reinforce other dispersal techniques. It is selective for target species and may be used in conjunction with the use of spotlights, decoys, and calling. Shooting with rifles or shotguns is sometimes used to manage bird damage problems when lethal methods are determined to be appropriate. The birds are killed as quickly and humanely as possible.

### **3.2.5 ALTERNATIVE 2 - Nonlethal BDM Only By WS**

This alternative would require that WS only utilize nonlethal methods in addressing bird damage problems. With respect to WS's involvement in crane and goose damage management in the [REDACTED], this alternative is identical to the current program alternative. WS's activities in resolving blackbird and starling damage have been more than 50% nonlethal -- for example, for the 5-year period from FY 94 through 98, the number of blackbirds and starlings killed by WS personnel was 9,128 while the number moved by use of harassment with pyrotechnics totaled an estimated 19,800 (Figure 3-2). For other types of BDM problems, producers, state agency personnel, or others could conduct BDM activities including the use of traps, shooting, and any lethal or nonlethal methods they deem effective. However, DRC-1339 and alpha-chlorolose are currently only available for use by WS employees. Therefore use of these chemicals by private individuals would be illegal and private and commercial applicators would be left only with using other alternatives such as Avitrol if chemical control was needed.

**Figure 3-2. Numbers of blackbirds and starlings killed vs. the number moved via nonlethal means by WS FY 94-98.**



### **3.2.6 ALTERNATIVE 3 - Technical Assistance Only**

This alternative would not allow WS operational BDM in the State. WS would only provide technical assistance and make recommendations when requested. Producers, state agency personnel, or others could conduct BDM activities including the use of traps, shooting, and any lethal or nonlethal methods they deem effective. However, DRC-1339 and alpha-chlorolose are currently only available for use by WS employees. Therefore use of these chemicals by private individuals would be illegal and private and commercial applicators would be left only with using other alternatives such as Avitrol if chemical control was needed. WS would not conduct any operational hazing of cranes and geese in the [REDACTED] which would be in violation of a Congressional Directive.

### **3.2.7 ALTERNATIVE 4 - No Federal WS Bird Damage Management**

This alternative would consist of no federal involvement in BDM in the State -- neither direct operational management assistance nor technical assistance to provide information on nonlethal and/or lethal management techniques would be available from WS. Information on future developments in nonlethal and lethal management techniques that culminate from research efforts by WS's research branch would still be available to affected resource owners or managers. However, the NM WS program would not be a direct source of such information. Producers, state agency personnel, or others would be left with the option to conduct BDM activities including the use of traps, shooting, and any lethal or nonlethal methods they deem effective with the exception of DRC-1339 and Alpha-chlorolose which are currently only available for use by WS employees. Therefore use of these chemicals by private individuals would be illegal and private and commercial applicators would be left only with using other alternatives such as Avitrol if chemical control was needed. WS would not conduct any operational hazing of cranes and geese in the [REDACTED] which would be in violation of a Congressional Directive.

## **3.3 Alternatives Considered But Not Analyzed in Detail With Rationale**

Several alternatives were considered but not analyzed in detail. These were:

### **3.3.1 Lethal BDM Only By WS**

Under this alternative, WS would not conduct any nonlethal control of birds for BDM purposes in the State, but would only conduct lethal BDM. This alternative was eliminated from further analysis because many bird damage problems can be resolved effectively through nonlethal means. For example, for [REDACTED] crane and goose damage management, WS uses nonlethal methods exclusively and they are effective in resolving damage. Restricting that portion of the program to lethal methods only would not be accepted by the NMGF or the USFWS.

### **3.3.2 Compensation for Bird Damage Losses**

The Compensation alternative would require the establishment of a system to reimburse persons impacted by bird damage. This alternative was eliminated from further analysis because no federal or state laws currently exist to authorize such action. Under such an alternative, WS would not provide any direct control or technical assistance. Aside from lack of legal authority, analysis of this alternative in the FEIS indicated that the concept has many drawbacks (USDA 1994):

- It would require larger expenditures of money and labor to investigate and validate all damage claims, and to determine and administer appropriate compensation. A compensation program would likely cost several times as much as the current program. In the [REDACTED], crane and goose damage would likely exceed \$100,000 per year, yet the current nonlethal yet effective WS program of abating such damage only costs about \$60,000 per year.
- Compensation would most likely be below full market value. It is difficult to make timely responses to all requests to assess and confirm damage, and certain types of damage could not be conclusively verified. For example, it would be impossible to prove conclusively in individual situations that birds were responsible for disease outbreaks even though they may actually have been responsible. Thus, a compensation program that requires verification would not meet its objective for mitigating such losses.
- Compensation would give little incentive to resource owners to limit damage through improved cultural, husbandry, or other practices and management strategies.
- Not all resource owners would rely completely on a compensation program and unregulated lethal control would most likely continue as permitted by state law.
- Compensation would not be practical for reducing threats to human health and safety.

### **3.3.3 Short Term Eradication and Long Term Population Suppression**

An eradication alternative would direct all WS program efforts toward total long term elimination of bird populations on private, state, local government, and tribal lands within entire cooperating counties or larger defined areas in the State.

In New Mexico, eradication of native bird species (the starling, English sparrow, and feral domestic pigeon are not native to North America) is not a desired population management goal of state agencies. Although generally difficult to achieve, eradication of a local population of feral

domestic pigeons or starlings may be the goal of individual BDM projects. This is because feral domestic pigeons and starlings are not native to North America and are only present because of human introduction. However, eradication as a general strategy for managing bird damage will not be considered in detail because:

- All state and federal agencies with interest in or jurisdiction over wildlife oppose eradication of any native wildlife species.
- Eradication is not acceptable to most members of the public.
- Because blackbirds and starlings are migratory and most winter populations are comprised of winter migrants from northern latitudes, eradication would have to be targeted at the entire North American populations of these species to be successful. That would not be feasible or desirable.

Suppression would direct WS program efforts toward managed reduction of certain problem populations or groups. In areas where damage can be attributed to localized populations of birds, WS can decide to implement local population suppression as a result of using the WS Decision Model. Problems with the concept of suppression are similar to those described above for eradication.

It is not realistic or practical to consider large-scale population suppression as the basis of the WS program. Typically, WS activities in the State would be conducted on a very small portion of the sites or areas inhabited or frequented by problem species.

#### **3.3.4 Use of bird-proof feeders in lieu of lethal control at dairies and cattle feeding facilities**

A method proposed by Animal Protection of New Mexico, Inc. for excluding birds at dairies and cattle feeding facilities is a “bird-proof” feeder that involves the installation of 1/8" thick steel panel feed troughs covered by parallel 4-6 inch spaced steel cables or wires running from the outer top edge of the trough up at a 30-45 degree angle to the top of the head chutes that cattle use to access the feed. Vertical canvas strips are hung from the cables. The feeder was reportedly designed for use with horses. A copy of a diagram of this system was sent to Mr. Jim Glahn, Bird Control Research Biologist, National Wildlife Research Center, who has nearly 10 years of experience researching problems caused by starlings at livestock feeding operations, and to the Extension Wildlife Specialist and Livestock Specialist at New Mexico State University (Dr. John Boren, Dr. Ron Parker, NMSU Coop. Ext. Service, pers. comm. 1999) for opinions regarding the potential effectiveness and practicality of the feeder. Concerns expressed were:

- no efficacy data were available on the effectiveness of the design in excluding starlings and blackbirds. Unresolved concerns were that the cables could provide temporary perching sites for the birds and that birds might enter the trough from the rear where the cows insert their heads through the chutes to access feed (Boren and Parker).
- a major flaw in the design is the spacing of the cables at 4-6" which would allow starlings to drop through. Reducing the spacing to 2" as recommended by Johnson and Glahn (1994) would likely interfere with the delivery of feed to the troughs. This is because the feed mixture currently used by most dairies is a mixture of chopped alfalfa hay and corn silage with a grain component. The alfalfa/corn silage portion would likely hang up on the cable or wire strands of the troughs and much would fall outside the troughs, with increased feed waste a result (Glahn).



- the spacing of the canvas strips is not specified, and canvas would deteriorate quickly from cattle licking and weather (Glahn).
- altering from an open platform feeding system to enclosed troughs would pose problems with removal of rejected or spoiled feed. The troughs would likely require substantial increases in manual labor to clean versus the current method of using a tractor-mounted blade or front-end loader (Boren and Parker; Glahn).
- the cable/wire barriers would likely hinder the application of injectable medicines which is currently achieved by use of the “lockup” feeding chutes that restrain the cows by the head and neck for this purpose (Boren and Parker).
- feed consumption might be reduced, at least temporarily, due to reluctance of cows to put their heads into a semi-enclosed environment (Boren and Parker).
- the conversion to the suggested feed trough design would likely be substantial. Most dairy/feedlot managers would be reluctant to convert considering initial cost and the added inconveniences discussed above (Boren and Parker).

Dr. Boren and Dr. Parker suggested that, at a minimum, a replicated field study should be conducted to address these concerns before such a system is implemented. Mr. Glahn expressed the opinion, based on Twedt and Glahn (1982) and Feare (1984), that exclusion methods to reduce starling depredations at livestock feeding operations is usually the least cost-effective solution.

Despite the above concerns about the bird-proof feeder system recommended by APNM, Inc., similar type systems could be recommended by WS under the current program should any become available that are effective, practical, and economically feasible for producers to implement.

### **3.4 Mitigation and Standard Operating Procedures for Bird Damage Management Techniques**

#### **3.4.1 Mitigation in Standard Operating Procedures (SOPs)**

Mitigation measures are any features of an action that serve to prevent, reduce, or compensate for impacts that otherwise might result from that action. The current WS program, nationwide and in New Mexico, uses many such mitigation measures and these are discussed in detail in Chapter 5 of the FEIS (USDA 1994). Some key mitigating measures pertinent to the proposed action and alternatives that are incorporated into WS's Standard Operating Procedures include:

- The WS Decision Model thought process which is used to identify effective wildlife damage management strategies and their impacts.
- Reasonable and prudent measures or alternatives are identified through consultation with the USFWS and are implemented to avoid impacts to T&E species.
- EPA-approved label directions are followed for all pesticide use. The registration process for chemical pesticides is intended to assure minimal adverse impacts to the environment when chemicals are used in accordance with label directions.
- All WS Specialists in the State who use restricted chemicals are trained and certified by,

or else operate under the direct supervision of, program personnel or others who are experts in the safe and effective use of chemical BDM materials.

- The presence of nontarget species is monitored before using DRC-1339 to control starlings and blackbirds at feedlots to reduce the risk of significant mortality of nontarget species populations.
- Research is being conducted to improve BDM methods and strategies so as to increase selectivity for target species, to develop effective nonlethal control methods, and to evaluate nontarget hazards and environmental impacts.

Some additional mitigating factors specific to the current program include:

- Management actions would be directed toward localized populations or groups of target species and/or individual offending members of those species. Generalized population suppression across the State, or even across major portions of the state, would not be conducted.
- WS uses BDM devices and conducts activities for which the risk of hazards to public safety and hazard to the environment have been determined to be low according to a formal risk assessment (USDA 1994, Appendix P). Where such activities are conducted on private lands or other lands of restricted public access, the risk of hazard to the public is even further reduced.

### **3.4.2 Additional Mitigation Specific to the Issues**

The following is a summary of additional mitigation measures that are specific to the issues listed in Chapter 2 of this document.

#### **3.4.2.1 Effects on Target Species Populations**

- BDM activities are directed to resolving bird damage problems by taking action against individual problem birds, or local populations or groups, not by attempting to eradicate populations in the entire area or region.
- WS take is monitored by comparing numbers of birds killed by species or species group (e.g., blackbirds) with overall populations or trends in populations to assure the magnitude of take is maintained below the level that would cause significant adverse impacts to the viability of native species populations (See Chapter 4).

#### **3.4.2.2 Effects on Nontarget Species Populations Including T&E Species**

- WS personnel are trained and experienced to select the most appropriate method for taking problem animals and excluding nontargets.
- Observations of birds feeding at feedlots or dairies, or of birds that are associated with feral domestic pigeon concentrations are made to determine if nontarget or T & E species would be at significant risk from BDM activities.

- WS has consulted with the USFWS regarding potential impacts of control methods on T&E species, and abides by reasonable and prudent alternatives (RPAs) and/or reasonable and prudent measures (RPMs) established as a result of that consultation. For the full context of the Biological Opinion see the ADC FEIS, Appendix F (USDA 1994). Further consultation on species not covered by or included in that formal consultation process has been initiated with the USFWS and WS will abide by any RPAs, RPMs, and terms and conditions that result from that process to avoid jeopardizing any listed species.
- WS may be called upon to control nest parasitism by cowbirds to protect the endangered southwestern willow flycatcher. This action would provide a positive benefit to this endangered species with no significant negative impacts to overall cowbird populations.
- WS uses chemical methods for BDM that have undergone rigorous research to prove their safety and lack of serious effects on nontarget animals and the environment.

## **4.0 CHAPTER 4: ENVIRONMENTAL CONSEQUENCES**

Chapter 4 provides information needed for making informed decisions in selecting the appropriate alternative for meeting the purpose of the proposed action. The chapter analyzes the environmental consequences of each alternative in relation to the issues identified for detailed analysis in Chapter 2. This section analyzes the environmental consequences of each alternative in comparison with the proposed action to determine if the real or potential impacts would be greater, lesser, or the same. Therefore, the proposed action or current program alternative serves as the baseline for the analysis and the comparison of expected impacts among the alternatives. The background and baseline information presented in the analysis of the current program alternative thus also applies to the analysis of each of the other alternatives.

The following resource values within the State are not expected to be significantly impacted by any of the alternatives analyzed: soils, geology, minerals, water quality/quantity, floodplains, wetlands, visual resources, air quality, prime and unique farmlands, aquatic resources, timber, and range. These resources will not be analyzed further.

Cumulative Impacts: Discussed in relationship to each of the potentially affected species analyzed in this chapter.

Irreversible and Irretrievable Commitments of Resources: Other than minor uses of fuels for motor vehicles and other materials, there are no irreversible or irretrievable commitments of resources.

Impacts on sites or resources protected under the National Historic Preservation Act: WS BDM actions are not undertakings that could adversely affect historic resources (See Section 1.7.2.5).

### **4.1 Environmental Consequences for Issues Analyzed in Detail**

#### **4.1.1 Effects on Target Species Bird Populations**

##### **4.1.1.1 Alternative 1. - Continue the Current Federal Bird Damage Management Program (The Proposed Action as described in Chapter 1)**

Analysis of this issue is limited primarily to those species most often killed during WS BDM. The analysis for magnitude of impact generally follows the process described in Chapter 4 of USDA (1994). Magnitude is described in USDA (1994) as "*. . . a measure of the number of animals killed in relation to their abundance.*" Magnitude may be determined either quantitatively or qualitatively. Quantitative determinations are based on population estimates, allowable harvest levels, and actual harvest data. Qualitative determinations are based on population trends and harvest data when available. Generally, WS only conducts damage management on species whose population densities are high and usually only after they have caused damage. Table 4-1 shows the numbers of birds killed by species and method as a result of WS BDM activities in New Mexico from FY 96 through 98.

**Table 4-1. Birds killed by WS for Bird Damage Management in FY 96, 97, 98, and through April 30, 1999 of FY 99.**

FY	Species	Damage Management Methods						
		Alpha Chloro-lose <sup>1</sup>	DRC-1339	Avitrol	Decoy Trap	Cage Trap	Shooting	Hand Caught
1996	Pigeon		565	41		45	55	
1997	Pigeon		1,325	64		56		2
	Mixed Blackbird Species		3,000					
	Black Crowned Night Heron						4	
	Northern Flicker						1	
1998	Pigeon		4,901	14		229		
	English sparrow			75				
	Brown headed Cowbird				11			
	American Coot	26						
	Feral Duck	3						
1999 (to April 30, 1999)	Pigeon		300			59	30	
	Starling		1,322					
	Red-winged blackbird		1,322					
	American Coot	102						
	Feral Duck	2						
TOTAL BIRDS KILLED BY METHOD (OVER 3 YEARS & 7 MONTHS)		131	12,735	194	11	389	90	2

<sup>1</sup> Birds reported as killed were due to accidental mortalities or euthanasia associated with live-capture by alpha-chlorolose.

<sup>2</sup>Estimated

#### Starling and Blackbird Population Impacts

Colonization of North America by the European Starling began on March 6, 1890 when 80 starlings were released into New York's Central Park by a Mr. Eugene Schefflin, a member of the Acclimatization Society. The birds thrived and exploited their new habitat. By 1918, the advance line of migrant juveniles extended from Ohio to Alabama; by 1926 from Illinois to Texas; by 1941 from Idaho to New Mexico; and by 1946 to California and Canadian coasts (Miller 1975). In just 50 short years the starling had colonized the United States and expanded into Canada and Mexico and 80 years after the initial introduction had become one of the most common birds in North America (Feare 1984).

Precise counts of blackbird and starling populations do not exist but one estimate placed the United States summer population of the blackbird group at over 1 billion (USDA 1994) and the winter population at 500 million (Royall 1977). The majority of these birds occur in the eastern U.S.; for example surveys in the southeastern part of the country estimated 350 million blackbirds and starlings in winter roosts (Bookhout and White 1981). Meanley and Royal (1976) estimated 538 million blackbirds and starlings in winter roosts across the country during the winter of 1974-75. Of this total 26% or 139 million were in the west.

An extensive population survey by Dolbeer and Stehn published in 1979 showed that, in the southwestern U.S., the number of breeding starlings doubled between 1968 and 1976. In California, where starlings were first observed in 1942, the number of breeding birds increased by 19% during the same period. Breeding Bird Survey data from Hines et al. (1996) indicate a slight increase (0.8% per year) in the starling breeding population in the western U.S. from 1966 -1979, and a slight decrease (2.7% per year) from 1980 - 1994. Breeding Bird Survey data for New Mexico indicates starling populations stable or slightly increasing from 1985 to 1996. Red-winged blackbirds showed a stable population in the western United States. Yellow-headed blackbirds showed a steady increase from 1968 to 1996. Brewer's blackbirds showed a slightly decreasing population in New Mexico between 1968 and 1996, and the brown-headed cowbird which occur in New Mexico show slightly increasing trend in the New Mexico breeding population (Sauer et al. 1997). The bronzed cowbird shows a declining trend in western breeding populations (7.2%/year 1966-1979, and 11.6%/year 1980 - 1994), but the overall trend for the United States is increasing (Sauer et al. 1997).

The nationwide starling population has been estimated at 140 million (Johnson and Glahn 1994). The winter starling population in the northwest and southwest regions has been estimated at 27.8 million (Meanley and Royall 1976). The northwest and southwest regional population of the blackbird group is 139 million of which 27.8 million are starlings (Meanley and Royall 1976).

All of the above information indicates that populations of starlings and blackbirds have been relatively stable in recent years. For most species that show upward or downward trends, such trends have been relatively gradual. Additionally, blackbird populations are healthy enough, and the problems they cause great enough, that the USFWS has established a standing depredation order for use by the public. Under this "order" (50 CFR 21.43), no Federal permit is required by anyone to remove blackbirds if they are committing or about to commit depredations upon ornamental or shade trees, agricultural crops, livestock, or wildlife, or when concentrated in such numbers and manner as to constitute a health hazard or other nuisance.

During FY 96 -FY 98, NM WS took 3,000 blackbirds at cattle feeding facilities, and 11 brown headed cowbirds to aid southwest willow flycatcher production. In FY 1999, WS killed an estimated 1,322 European starlings, and, although not verified, approximately that many red-winged blackbirds in the state. For the 5-year period of FY 94 through FY 99 (to date), WS in NM has killed an average of only 1,700 to 1,800 blackbirds and starlings per year for BDM. Between FY 1996 and 1998, States in the WS Western Region reported a total kill of between 136,000 and 800,000 blackbirds and between 464,000 and 603,000 starlings per year. The average annual reported kill was 372,000 blackbirds and 515,000 starlings (data from WS MIS system). No other sources of major human-caused blackbird and starling mortality are known.

Natural mortality in blackbird populations is between 50% and 65% of the population each year, regardless of human-caused control operations (USDA 1994). The northwest and southwest

regional population of the blackbird group has been estimated to be about 140 million of which about 28 million are starlings (Meanley and Royall 1976). Estimated natural mortality of the blackbird group should therefore be between 60 and 75 million birds annually. WS kill of blackbirds and starlings in New Mexico has been less than .006% of the estimated natural mortality of these populations, and would be expected to be no more than 2% of total mortality in any one year under the current program. The number of birds killed by the NM WS program amounts to only 0.002% of the regional wintering population. Regionally, WS's *confirmed kill*, which may be underestimated, averages less than a million blackbirds and starlings annually, which accounts for only 1% of the natural mortality and only 0.54% of the regional wintering population. Even if WS's actual regional kill is much higher than the "confirmed" kill, it should continue to be well below normal mortality levels for these populations.

Dolbeer et al. (1995) showed that WS kills of 3.6% of the wintering population had no effect on breeding populations the following spring. Dolbeer et al. (1976) constructed a population model which indicated that a reduction of 14.8% of the wintering blackbird population would reduce the spring breeding population by 20% and that a 56.2% reduction in the wintering blackbird population would reduce spring breeding populations by only 33%. Given the density-dependent relationships in a blackbird population (i.e. decreased mortality and increased fecundity of surviving birds) a much higher number would likely have to be killed in order to impact the regional breeding population.

Cumulative impacts would be mortality caused by the NM WS program added to the other known human causes of mortality. Given that the maximum annual mortality caused by the NM WS program has not accounted for more than 0.003% of the regional blackbird population, and should not exceed 3% of the population in any future year, the proposed control projects implemented under this alternative would have no significant impact on overall breeding populations.

Starlings, being non-indigenous and because of their negative impacts and competition with native birds, are considered by many wildlife biologists and ornithologists to be an undesirable component of North American wild and native ecosystems. Any reduction in starling populations in North America, even to the extent of complete eradication, could be considered a beneficial impact to native bird species. Additionally, blackbird populations are healthy enough, and the problems they cause great enough, that the USFWS has established a standing depredation order for use by the public. Under this "order" (50 CFR 21.43), no Federal permit is required by anyone to remove blackbirds if they are committing or about to commit depredations upon ornamental or shade trees, agricultural crops, livestock, or wildlife, or when concentrated in such numbers and manner as to constitute a health hazard or other nuisance.

#### Feral Domestic Pigeon Population Impacts

The feral domestic pigeon, also known as the rock dove, is an introduced nonnative species in North America. Breeding Bird Survey data indicate the species has been stable across the western United States from 1967 through 1995 (Sauer et al. 1997). The species is not protected by federal or state law. Any BDM involving lethal control actions by WS for this species would be restricted to isolated, individual sites, or communities. In those cases where feral domestic pigeons are causing damage or are a nuisance, complete removal of the local population could be achieved. This would be considered to be a beneficial impact on the human environment since it would be requested by the affected property owner or administrator. Although regional population impacts would be minor, even if significant regional or nationwide reductions could be achieved, this would

not be considered an adverse impact on the human environment because the species is not part of native ecosystems. However, major population reduction in some localities may be considered a negative impact by some individuals who experience aesthetic enjoyment of pigeons.

Between FY 96 and FY 98, NM WS took an average of 2,400 pigeons per year statewide, primarily to reduce sanitation and health problems associated with accumulations of droppings on rooftops and store fronts. This relatively small number of pigeons taken at multiple sites undoubtedly had little effect on overall pigeon populations in New Mexico.

#### Sandhill crane and snow goose population impacts

WS does not conduct operational killing of sandhill cranes or geese. BDM by WS for these species is entirely nonlethal, and, therefore, results in no direct impact on populations of these species. Sport hunters kill controlled numbers of these species under the close regulatory management of the USFWS and the NMGF. Harassment by WS employees may negatively impact cranes or geese in the short term, especially if weather is particularly cold, because the birds are expending energy that they would otherwise not have to. However, there are likely no long term significant negative impacts due to harassment (John Taylor, USFWS, pers.comm.). Birds are usually moved to state or federal refuges or management areas where higher quality and a larger quantity of feed is available. Also, populations of sandhill cranes and geese that winter in New Mexico are stable or increasing (J. Haskins, USFWS, pers. comm., 1999), which supports a conclusion that the hazing program has not resulted in any significant direct, indirect, or cumulative adverse impacts on these species. A likely benefit to these species is that the success of the hazing program probably increases the tolerance of agricultural producers to the presence of cranes and geese in the [REDACTED], which means they should be less inclined to seek political help in reducing populations through increased sport hunting or direct population management.

#### American Coot Population Impacts

American coots or "mud hens," are common, duck-sized, blackish-gray birds with a white bill and are distributed over most of the lower 48 States and in Canada (Sauer et al. 1997). Coots migrate to New Mexico, or through New Mexico to more southern destinations, in the fall. Like several species of waterfowl, coots are omnivorous, with aquatic and terrestrial plants and invertebrates making up most of their diet.

WS captured a total of 106 American coots as part of BDM activities in the State during the 3-year period of FY 96-98, and captured 194 during the first 7 months of FY 99. Of the total of 300 coots captured during that period, 131 were killed either accidentally during capture with alpha-chlorolose or by euthanasia, and the rest were relocated to state or federal game/wildlife refuges. Under the current program alternative, WS expects the take of coots to remain minor in the state as a whole, but no more than 600 are expected to be killed in any one year. In preparing an EA covering an alpha-chlorolose project to remove nuisance coots at a golf course in [REDACTED], NM in 1998, the USFWS was consulted and an opinion was obtained that removal of up to 500 coots in that one project would have a negligible impact on the coot population in the Central Flyway and would probably have a negligible impact on the New Mexico population of coots (J. Haskins, Migratory Bird Coordinator, USFWS, pers. comm. 1998). Breeding Bird Survey data indicate the coot population has been relatively stable across the western United States and has increased in the U.S. as a whole from 1967 through 1995 (Sauer et al. 1997). This information indicates WS BDM activities should have had no significant cumulative impact on the American coot as a species and



that no significant cumulative impacts are expected to occur.

#### House Sparrow Population Impacts

House sparrows or English sparrows were introduced to North America from England in 1850 and have spread throughout the continent (Fitzwater 1994). The species is not protected by Federal or State laws. Like starlings and pigeons, because of their negative impacts and competition with native bird species, house sparrows are considered by many wildlife biologists, ornithologists, and naturalists to be an undesirable component of North American native ecosystems. House sparrows are found in nearly every habitat except dense forest, alpine, and desert environments. It prefers human-altered habitats, and is abundant on farms and in cities and suburbs (Robbins et al. 1983).

Breeding Bird Survey (BBS) population trends from 1966-96 indicate that house sparrows are increasing in NM by about 2.6% per year, but are decreasing throughout North America as a whole by about 2.2% per year, and in the Western BBS region by about 1.5% per year (Sauer et al. 1997). Christmas Bird Count (CBC) data indicate the species declined by about 1.9% per year in North America from 1959 through 1988 (Sauer et al. 1996). In the 3 ½ year period from FY 96 through April of FY 1999, WS killed a total of only 75 house sparrows (Table 4-1) which should be an exceedingly minor component of overall house sparrow populations and overall house sparrow mortality. Because they are considered extremely abundant and are not afforded protection by Federal or State law, depredation permits are not required before they can be killed by the public.

Any BDM involving lethal control of house sparrows by WS would probably be restricted to individual sites. As stated previously, because house sparrows (also known as English sparrows) are not native to North America, any reduction in house sparrow populations, even to the extent of complete eradication, could be considered a beneficial impact on populations of native bird species. Therefore, any reduction in this species' populations in North America should not be considered as having any significant adverse impact on the quality of the human environment.

#### Black-crowned Night Heron Population Impact

Black-crowned night-herons are considered to be residents in the middle and lower Rio Grande and lower Pecos valleys (Klingel 1997). In areas where this species is considered a resident, they are considered to be rare to fairly common. Black-crowned night herons migrate statewide. It is rare to uncommon and local in migration (Klingel 1997). The diet of the night-heron consists of fish, crustaceans, aquatic insects, frogs, and small mammals (King and Pyle 1966) and is normally a nocturnal hunter (Bent 1963).

WS has taken only 4 black-crowned night herons in the 3 ½ year period from FY 1996 through April 1999 (Table 4-2). BBS population trend data for the period from 1966 to 1996 indicate that black-crowned night herons are increasing at about 9.3%, 5.9%, and 5.2% annually in the Western BBS region, the U.S., and North America as a whole, respectively, (Sauer et al. 1997). CBC data (Sauer et al. 1996) also show an increasing population trend of 2.2% per year from 1959 to 1988 in North America. Therefore, the species appears to be doing well and human-caused mortality, including minor numbers taken by WS, has not had any significant adverse impact on populations. WS will continue to coordinate with USFWS before taking members of this species to assure that they have ample opportunity to identify any concerns about the potential for significant adverse effects on the species.

### Other Target Species

Target species in addition to those analyzed above that have been killed in small numbers by WS during the past several years include northern flickers (n=1) and feral domestic ducks (n=5) (Table 4-1). Other species that could be killed during BDM include any of the species listed in Section 1.2. None of these species are expected to be taken by WS BDM at any level that would significantly affect populations.

#### **4.1.1.2 Alternative 2 - Nonlethal BDM Only by WS**

Under this alternative, WS would not take any target species because no lethal methods would be used. This alternative would have the same impact on sandhill crane and goose populations as the current program since WS's crane and goose damage management is already nonlethal only. Although WS take of other target bird species such as feral domestic pigeons, blackbirds, and starlings would not occur, it is likely that, without WS conducting some level of lethal BDM activities for these species, private BDM efforts would increase, leading to potentially similar or even greater cumulative impacts on target species populations than those of the current program alternative. For the same reasons shown in the population impacts analysis in section 4.1.1.1, however, it is unlikely that starlings or other target bird populations would be impacted significantly by implementation of this alternative. Impacts and hypothetical risks of illegal chemical toxicant use under this alternative would probably be greater than the proposed action, about the same as Alternative 3, but less than under Alternative 4.

#### **4.1.1.3 Alternative 3 - Technical Assistance Only**

Under this alternative, WS would have no impact on feral domestic pigeons, blackbird, starling, or other target species populations in the State because the program would not conduct any operational BDM activities but would be limited to providing advice only. Private efforts to reduce or prevent bird damage and perceived disease transmission risks could increase which could result in similar or even greater impacts on those populations than the current program alternative. For the same reasons shown in the population impacts analysis in section 4.1.1.1, however, it is unlikely that starlings or other target bird populations would be impacted significantly by implementation of this alternative. DRC-1339 and the tranquilizer alpha-chlorolose are currently only available for use by WS employees. It is hypothetically possible that frustration caused by the inability to reduce losses could lead to illegal use of other chemicals which could lead to real but unknown impacts on target bird populations. Impacts and hypothetical risks of illegal chemical toxicant use under this alternative would probably be about the same as those under Alternative 2. Impacts on sandhill crane and goose populations would be about the same as the current program alternative since the current program uses nonlethal methods only to address crane and goose damage problems.

#### **4.1.1.4 Alternative 4 - No Federal WS BDM**

Under this alternative, WS would have no impact on feral domestic pigeons, blackbird, starling, or other target species populations in the State. Private efforts to reduce or prevent depredations could increase which could result in impacts on target species populations to an unknown degree. Impacts on target species under this alternative could be the same, less, or more than those of the proposed action depending on the level of effort expended by private persons. For the same reasons shown in the population impacts analysis in section 4.1.1.1 it is unlikely that starlings or other

target bird populations would be impacted significantly by implementation of this alternative. DRC-1339 and the tranquilizer alpha-chlorolose are currently only available for use by WS employees. It is hypothetically possible that frustration caused by the inability to reduce losses could lead to illegal use of other chemicals which could lead to real but unknown impacts on target bird populations. Impacts on sandhill crane and goose populations would be about the same as the current program alternative since the current program uses nonlethal methods only to address crane and goose damage problems.

#### **4.1.2 Effects on Nontarget Species Populations, including Threatened and Endangered Species.**

##### **4.1.2.1 Alternative 1 - Continue the Current Federal Bird Damage Management Program (The Proposed Action)**

Adverse Impacts on Nontarget (non-T&E) Species. WS take of nontarget species during BDM activities has been extremely low. The only nontarget birds known to have been killed during BDM operations as described in the proposed action from FY 96-98 were 5 feral domestic ducks during use of the tranquilizer alpha-chlorolose to capture nuisance coots (Table 4-1). These data indicate that nontarget mortality has only been 0.2% of the total number of birds killed over the past three years. Although it is possible that some nontarget birds were unknowingly killed by use of DRC-1339 for pigeon or blackbird/starling control, the method of application is designed to minimize or eliminate that risk. For example, DRC-1339 treated bait is only applied after a period of prebaiting with untreated bait material and when nontarget birds are not observed coming to feed at the site.

While every precaution is taken to safeguard against taking nontarget birds, at times changes in local flight patterns and other unanticipated events can result in the incidental take of unintended species. These occurrences are rare and should not affect the overall populations of any species under the current program.

Beneficial Impacts on Nontarget Species. Inter-specific nest competition has been well documented in starlings. Miller (1975) and Barnes (1991) reported starlings were responsible for a severe depletion of the eastern bluebird (*Sialis sialis*) population due to nest competition. Nest competition by starlings has also been known to adversely impact sparrow hawks (American kestrel (*Falco sparverius*) (Nickell 1967; Von Jarchow 1943; Wilmer 1987), red-bellied woodpeckers (*Centurus carolinus*), Gila woodpeckers (*Centurus uropygialis*) (Ingold 1994; Kerpez et.al. 1990), and wood ducks (*Aix sponsa*) (Shake 1967; Heusmann et.al. 1977; Grabill 1977; McGilvery et.al 1971). Weitzel (1988) reported 9 native species of birds in Nevada had been displaced by starling nest competition, and Mason et al. (1972) reported starlings evicting bats from nest holes. Control operations as proposed in this alternative could reduce starling populations, although probably not significantly. Reduction in nest site competition would be a beneficial impact on the species listed above. Although such reductions are not likely to be significant, the benefits would probably outweigh any adverse impacts due to nontarget take.

T&E Species Impacts. T&E species that are federally listed (or proposed for listing) for the State of New Mexico are:

Mammals:

Black-footed ferret (*Mustela nigripes*)  
Jaguar (*Panthera onca*)  
(Proposed for listing)  
Lesser long-nosed bat  
(*Leptonycteris curasoae yerbabuenae*)  
Mexican long-nosed bat  
(*Leptonycteris nivalis*)  
Mexican gray wolf (*Canis lupus baileyi*)

Birds:

American peregrine falcon  
(*Falco peregrinus*)  
Bald eagle (*Haliaeetus leucocephalus*)  
Brown pelican (*Pelecanus occidentalis*)  
Northern aplomado falcon  
(*Falco femoralis septentrionalis*)  
Mexican spotted owl (*Strix occidentalis lucida*)  
Whooping crane (*Grus americana*)  
Southwestern willow  
flycatcher  
(*Empidonax traillii extimus*)  
Interior least tern (*Sterna antillarum*)  
Piping plover (*Charadrius melodius*)  
Mountain plover (*Charadrius montanus*) (proposed  
for listing)

Reptiles:

Ridge-nosed rattlesnake  
(*Crotalus willardi obscurus*)

Fish:

Pecos gambusia (*Gambusia nobilis*)

Pecos bluntnose shiner  
(*Notropis simus pecosensis*)  
Rio Grande silvery minnow  
(*Hybognathus amarus*)  
Colorado Squawfish  
(*Ptychocheilus lucius*)  
Razorback sucker (*Xyrauchen texanus*)  
Arkansas river shiner  
(*Notropis girardi*)  
(Proposed)  
Gila topminnow (*Poeciliopsis occidentalis*)  
Gila trout (*Oncorhynchus gilae*)  
Beautiful shiner (*Cyprinella formosa*)  
Chihuahua chub (*Gila nigrescens*)  
Loach minnow (*Tiaroga cobitis*)  
Colorado Pikeminnow  
(=squawfish)  
(*Ptychocheilus lucius*)  
Spikedace (*Meda fulgida*)  
Woundfin (*Plagopterus argenteus*)

Invertebrates:

Alamosa springsnail (*Tryonia alamosae*)  
Socorro springsnail  
(*Pyrgulopsis neomexicana*)  
Socorro isopod  
(*Thermosphaeroma thermophilus*)

Plants:

Kuenzler hedgehog cactus  
(*Echinocereus fendleri*)  
Lloyd's hedgehog cactus  
(*Echinocereus lloydii*)

Lloyd's Mariposa cactus ( <i>Echinomastus mariposensis</i> )	Todsen's pennyroyal ( <i>Hedeo matodsenii</i> )
Gypsum wild-buckwheat ( <i>Eriogonum gypsophilum</i> )	Holy ghost ipomopsis ( <i>Ipomopsis sancti-spiritus</i> )
Lee pincushion cactus ( <i>Coryphantha sneedii</i> var. <i>leei</i> )	Knowlton cactus ( <i>Pediocactus knowltonii</i> )
Sacramento prickly poppy ( <i>Agremone pleiacantha</i> spp. <i>pinnatisecta</i> )	Mancos milk-vetch ( <i>Astragalus humillimus</i> )
Sacramento mountains thistle ( <i>Cirsium vinaceum</i> )	Mesa Verde cactus ( <i>Sclerocactus mesaverde</i> )
Sneed pincushion cactus ( <i>Coryphantha sneedii</i> var. <i>sneedii</i> )	Parish's alkali grass ( <i>Puccinellia parishii</i> ) (Proposed)
	Zuni fleabane ( <i>Erigeron rhizomatusus</i> )

WS BDM would have no effect on any of the above listed invertebrates, fish, reptiles, amphibians, or plants.

The 1992 Biological Opinion (B.O.) from the USFWS concluded that the brown pelican, interior least tern, and piping plover would not be adversely affected by any aspect of the WS program which included all methods of BDM described herein (USDA 1994, Appendix F).

The mountain plover is a lowland grassland bird species and is not found in the mountains, in spite of its common name (Sager 1996). The species' diet consists nearly completely of invertebrates (Klingel 1997) and does not occur at sites where WS might be requested to use toxicants for BDM (such as dairies, feedlots, and on or around urban buildings or structures). Therefore, WS BDM activities would have no effect on this species.

The 1992 Biological Opinion (B.O.) from the USFWS determined that the only BDM method that might adversely affect the bald eagle was above ground use of strychnine treated bait for "nuisance birds." Strychnine is no longer registered for above ground use and would not be used by WS for BDM in the State. DRC-1339 poses no primary hazard to eagles because eagles do not eat grain or other bait materials on which this chemical might be applied during BDM, and, further, because eagles are highly resistant to DRC-1339 — up to 100 mg doses were force fed to captive golden eagles with no mortality or adverse effects noted other than regurgitation and head-shaking (Larsen and Dietrich 1970). Secondary hazards to raptors from DRC-1339 and Avitrol are low to nonexistent (see Appendix B). Therefore, WS BDM in NM will have no adverse effects on bald eagles.

In the 1992 B.O., the USFWS determined that the only BDM methods that might adversely affect the American peregrine falcon was the above ground use of strychnine which could cause secondary poisoning if falcons consumed birds that had died from this chemical. However, strychnine is no longer registered for above ground use and would not be used by WS for BDM in the State. The USFWS found no concern about adverse effects on this species from DRC-1339 or

Avitrol use. Risks of secondary hazards from these chemicals for BDM would be exceedingly low (see Appendix B).

The USFWS determined that the northern aplomado falcon would only be potentially adversely affected by reductions in the availability of small birds and rodents which the species preys upon, but concluded that the possibility is remote because the species feeds on a wide variety of prey. The USFWS found no concern about adverse effects on this species from DRC-1339 or Avitrol use. Risks of secondary hazards from these chemicals for BDM would be exceedingly low (see Appendix B).

DRC-1339 could potentially adversely affect the Aleutian Canada Goose (*Branta canadensis leucopareia*) and the Whooping Crane. New Mexico is not within the historic range of the Aleutian Canada Goose; thus, the species would not be affected by BDM in NM. DRC-1339 use for feral domestic pigeon control around or on buildings and structures and for blackbird/starling control at feedlots/dairies would not affect the whooping crane because it is not known to occur at such sites. In the 1992 B.O., the USFWS concluded that toxicants used by the WS program would not jeopardize the whooping crane and that incidental take was not anticipated.

Mitigation measures to avoid T&E impacts were described in Chapter 3 (section 3.4.2.2) and are also described in section 4.1.4.1 of this chapter. The inherent safety features of DRC-1339 use that preclude or minimize hazards to mammals and plants are described in Appendix B and in a formal risk assessment in the ADC FEIS (USDA 1994, Appendix P). Those measures and characteristics should assure there would be no jeopardy to T&E species or adverse impacts on mammalian or non-T&E bird scavengers from the proposed action. None of the other control methods described in the proposed action alternative pose any hazard to nontarget or T&E species. Of benefit to a listed T&E species would be any reduction in local cowbird populations which could reduce nest parasitism on the endangered southwestern willow flycatcher.

#### **4.1.2.2 Alternative 2 - Nonlethal BDM Only by WS**

Under this alternative, WS take of nontarget animals would probably be less than that of the proposed action because no lethal control actions would be taken by WS. However, nontarget take would not differ substantially from the current program because the current program takes very few nontarget animals. On the other hand, parties whose bird damage problems were not effectively resolved by nonlethal control methods would likely resort to other means of lethal control such as use of shooting by private persons or even illegal use of chemical toxicants. This could result in less experienced persons implementing control methods and could lead to greater take of nontarget wildlife than the proposed action. For example, shooting by persons not proficient at bird identification could lead to killing of nontarget birds. It is hypothetically possible that frustration caused by the inability to reduce losses could lead to illegal use of chemical toxicants which could lead to unknown impacts on local nontarget species populations, including T&E species. Hazards to raptors, including bald eagles and falcons, could therefore be greater under this alternative if chemicals that are less selective or that cause secondary poisoning are used by frustrated private individuals.

#### **4.1.2.3 Alternative 3 - Technical Assistance Only**

Alternative 3 would not allow any WS direct operational BDM in the area. There would be no impact on nontarget or T&E species by WS activities from this alternative. Technical assistance or

self-help information would be provided at the request of producers and others. Although technical support might lead to more selective use of control methods by private parties than that which might occur under Alternative 2, private efforts to reduce or prevent depredations could still result in less experienced persons implementing control methods leading to greater take of nontarget wildlife than under the proposed action. It is hypothetically possible that, similar to but probably less than under Alternative 2, frustration caused by the inability to reduce losses could lead to illegal use of chemical toxicants which could lead to unknown impacts on local nontarget species populations, including some T&E species. Hazards to raptors, including bald eagles, could therefore be greater under this alternative if chemicals that are less selective or that cause secondary poisoning are used by frustrated private individuals.

#### **4.1.2.4 Alternative 4 - No Federal WS Bird Damage Management**

Alternative 4 would not allow any WS BDM in the State. Nontarget take should not differ substantially from the current program because the current program takes very few nontarget animals. However, parties with bird damage problems would likely resort to other means of control such as use of shooting by private persons or even illegal use of chemical toxicants. There would be no impact on nontarget or T&E species by WS BDM activities from this alternative. However, private efforts to reduce or prevent depredations could increase which could result in less experienced persons implementing control methods and could lead to greater take of nontarget wildlife than under the proposed action. It is hypothetically possible that frustration caused by the inability to reduce losses could lead to illegal use of chemical toxicants which could impact local nontarget species populations, including some T&E species. Hazards to raptors, including bald eagles, could therefore be greater under this alternative if chemicals that are less selective or that cause secondary poisoning are used by frustrated private individuals.

### **4.1.3 Effects on Human Health and Safety**

#### **4.1.3.1 Impacts of chemical BDM methods on human health by Alternative**

##### **Alternative 1 - Continue the Current Program (Proposed Action)**

DRC-1339 (3-chloro-p-toluidine hydrochloride). DRC01339 is the primary lethal chemical BDM method that would be used under the current program alternative. There has been some concern expressed by a few members of the public that unknown but significant risks to human health may exist from DRC-1339 used for BDM.

The New Mexico WS program used an average of 595 grams of DRC-1339 during each of the past 3 years (range of 543 to 672 grams per year). Therefore, actual use of this chemical by WS in the State has been extremely low. This chemical is one of the most extensively researched and evaluated pesticides ever developed. Over 30 years of studies have demonstrated the safety and efficacy of this compound. Appendix B provides more detailed information on this chemical and its use in BDM. Factors that virtually eliminate any risk of public health problems from use of this chemical are:

- its use is prohibited within 50 feet of standing water and cannot be applied directly to food or feed crops (contrary to some misconceptions expressed by a few members of the public, DRC-1339 is not applied to feed materials that livestock can feed upon).

- DRC-1339 is highly unstable and degrades rapidly when exposed to sunlight, heat, or ultraviolet radiation. The half-life is about 25 hours, which means that treated bait material generally is nearly 100% broken down within a week.
- it is more than 90% metabolized in target birds within the first few hours after they consume the bait. Therefore, little material is left in bird carcasses that may be found or retrieved by people.
- application rates are extremely low (less than 0.1 lb. of active ingredient per acre) (EPA 1995).
- a human would need to ingest the internal organs of birds found dead from DRC-1339 to have any chance of receiving even a minute amount of the chemical or its metabolites into his/her system. This is highly unlikely to occur.
- The EPA has concluded that, based on mutagenicity (the tendency to cause gene mutations in cells) studies, this chemical is not a mutagen or a carcinogen (i.e., cancer-causing agent) (EPA 1995). Regardless, however, the extremely controlled and limited circumstances in which DRC-1339 is used would prevent any exposure of the public to this chemical.

The above analysis indicates that human health risks from DRC-1339 use would be virtually nonexistent under any alternative.

Avitrol (4-Aminopyridine). Avitrol is another chemical method that might be used by WS in BDM. Although this chemical was not identified as being one of concern for human health effects, analysis of the potential for adverse effects is presented here. Appendix B provides more detailed information on this chemical.

Avitrol is available as a prepared grain bait mixture that is mixed in with clean bait at no greater than a 1:9 treated to untreated mixture. The technical grade chemical is not currently handled by NM WS personnel. Use has been extremely limited in the NM WS program — over the 4-year period of FY 1994-1998, WS only used a total of 33 oz. of Avitrol-treated bait and killed a total of 119 pigeons and 75 English sparrows. In addition to this factor, other factors that virtually eliminate health risks to members of the public from use of this product as an avicide are:

- It is readily broken down or metabolized into removable compounds that are excreted in urine in the target species (ETOXNET 1996). Therefore, little of the chemical remains in killed birds to present a hazard to humans.
- a human would need to ingest the internal organs of birds found dead from Avitrol ingestion to have any chance of receiving even a minute amount of the chemical or its metabolites into his/her system. This is highly unlikely to occur. Furthermore, secondary hazard studies with mammals and birds have shown that there is virtually no hazard of secondary poisoning.
- although Avitrol has not been specifically tested as a cancer-causing agent, the chemical was found not to be mutagenic in bacterial organisms (EPA 1997) . Therefore, the best scientific information available indicates it is not a carcinogen. Regardless, however, the



extremely controlled and limited circumstances in which Avitrol is used would prevent exposure of members of the public to this chemical.

The above analysis indicates that human health risks from Avitrol use would be virtually nonexistent under any alternative.

Other BDM Chemicals. Other nonlethal BDM chemicals that might be used or recommended by WS if they become registered would include repellents such as methyl anthranilate (artificial grape flavoring used in foods and soft drinks sold for human consumption), which has been used as an area repellent and is currently being researched as a livestock feed additive, and the tranquilizer drug Alpha-chlorolose. Such chemicals must undergo rigorous testing and research to prove safety, effectiveness, and low environmental risks before they would be registered by EPA or FDA. Any operational use of chemical repellents would be in accordance with labeling requirements under FIFRA and state pesticide laws and regulations which are established to avoid unreasonable adverse effects on the environment. Following labeling requirements and use restrictions are a built-in mitigation measure that would assure that use of registered chemical products would avoid significant adverse effects on human health.

Based on a thorough Risk Assessment, APHIS concluded that, when WS program chemical methods are used in accordance with label directions, they are highly selective to target individuals or populations, and such use has negligible impacts on the environment (USDA 1994).

#### **Alternative 2 - Nonlethal BDM Only by WS**

Alternative 2 would not allow for any lethal methods use by WS in the State. WS could only implement nonlethal methods such as harassment and exclusion devices and materials. Nonlethal methods could, however, include the tranquilizer drug Alpha-chlorolose and chemical repellents such as methyl anthranilate which, although already considered safe for human consumption because it is artificial grape flavoring, which might nonetheless raise concerns about human health risks. Such chemicals must undergo rigorous testing and research to prove safety, effectiveness, and low environmental risks before they would be registered by EPA or FDA. Any operational use of chemical repellents and tranquilizer drugs would be in accordance with labeling requirements under FIFRA and state pesticide laws and regulations and FDA rules which are established to avoid unreasonable adverse effects on the environment. Following labeling requirements and use restrictions are a built-in mitigation measure that would assure that use of registered chemical products would avoid significant adverse effects on human health.

Excessive cost or ineffectiveness of nonlethal techniques could result in some entities rejecting WS's assistance and resorting to other means of BDM. Such means could include illegal pesticide uses. Evidence of illegal pesticide use was found several years ago in the City of Carlsbad when a dead hawk found near some dead pigeons was found to have died from strychnine poisoning presumably from feeding on strychnine poisoned pigeons (██████, ██████, USDA, APHIS, WS, Roswell, NM pers. comm. 1999).

#### **Alternative 3 - Technical Assistance Only**

Alternative 3 would not allow any direct operational BDM assistance by WS in the State. WS would only provide advice and, in some cases, equipment or materials (i.e., by loan or sale) to other persons who would then conduct their own damage management actions. Concerns about human

health risks from WS's use of chemical BDM methods would be alleviated because no such use would occur. DRC-1339 is only registered for use by WS personnel and would not be available for use by private individuals except certified applicators under the direct supervision of WS personnel. Private efforts to reduce or prevent damage would be expected to increase, resulting in less experienced persons implementing damage management methods and leading to a greater risk than the No Action/Proposed Action alternative. However, because some of these private parties would be receiving advice and instruction from WS, concerns about human health risks from chemical BDM methods use should be less than under Alternative 2. Commercial pest control services would be able to use Avitrol and such use would likely occur to a greater extent in the absence of WS's assistance. Use of Avitrol in accordance with label requirements should avoid any hazard to members of the public. Hazards to humans and pets could be greater under this alternative if chemicals that are less selective or that cause secondary poisoning are used. It is hypothetically possible that frustration caused by the inability to alleviate bird damage could lead to illegal use of certain toxicants that, unlike WS's controlled use of DRC-1339 and Avitrol, could pose secondary poisoning hazards to pets and to mammalian and avian scavengers. Some chemicals that could be used illegally would present greater risks of adverse effects on humans than those used under the current program alternative.

#### **Alternative 4 - No Federal WS Bird Damage Management**

Alternative 4 would not allow any WS BDM in the State. Concerns about human health risks from WS's use of chemical BDM methods would be alleviated because no such use would occur. DRC-1339 is only registered for use by WS personnel and would not be available for use by private individuals. Private efforts to reduce or prevent damage would be expected to increase, resulting in less experienced persons implementing damage management methods and potentially leading to greater risk to human health and safety than the Current Program alternative. Commercial pest control services would be able to use Avitrol and such use would likely occur to a greater extent in the absence of WS's assistance. However, use of Avitrol in accordance with label requirements should avoid any hazard to members of the public. However, hazards to humans and pets could be greater under this alternative if other chemicals that are less selective or that cause secondary poisoning are used. It is hypothetically possible that frustration caused by the inability to alleviate bird damage could lead to illegal use of certain toxicants that, unlike WS's controlled use of DRC-1339 and Avitrol, could pose secondary poisoning hazards to pets and to mammalian and avian scavengers. Some chemicals that could be used illegally would present greater risks of adverse effects on humans than those used under the current program alternative.

##### **4.1.3.2 Impacts on human safety of nonchemical BDM methods by Alternative**

#### **Alternative 1 - Continue the Current Program (Proposed Action)**

Nonchemical BDM methods that might raise safety concerns include shooting with firearms and harassment with pyrotechnics. Firearms are only used by WS personnel who are experienced in handling and using them. WS personnel receive safety training on a periodic basis to keep them aware of safety concerns. The NM WS program has had no accidents involving the use of firearms or pyrotechnics in which a member of the public was harmed. A formal risk assessment of WS's operational management methods found that risks to human safety were low (USDA 1994, Appendix P). Therefore, no significant impacts on human safety from WS's use of these methods is expected.

## **Alternative 2 - No Federal WS Bird Damage Management**

Under this alternative, WS would not engage in or recommend use of any nonchemical BDM methods. Risks to human safety from WS's use of firearms and pyrotechnics would be lower than the current program alternative, but not significantly because NM WS's current BDM program has an excellent safety record in which no accidents involving the use of these devices have occurred that have resulted in a member of the public being harmed. However, increased use of firearms and pyrotechnics by less experienced and trained private individuals would probably occur without WS assistance. Risks to human safety would probably increase under this alternative, although not to the point that they would be significant.

## **Alternative 3 - Technical Assistance Only**

Under this alternative, WS would not engage in direct operational use of any nonchemical BDM methods. Risks to human safety from WS's use of firearms and pyrotechnics would be lower than the current program alternative, but not significantly because NM WS's current BDM program has an excellent safety record in which no accidents involving the use of these devices have occurred that have resulted in a member of the public being harmed. Increased use of firearms and pyrotechnics by less experienced and trained private individuals would probably occur without WS direct operational assistance which would likely increase human safety risks somewhat. Similar to Alternative 2, however, it is unlikely that these increased risks would become significant.

## **Alternative 4 - Nonlethal Required Before Lethal**

Under this alternative, WS would not use firearms for lethal control during BDM but would still be able to use them as a harassment method. Pyrotechnics would also be used by WS. Risks to human safety from WS's use of firearms and pyrotechnics would be lower than the current program alternative, but not significantly because NM WS's current BDM program has an excellent safety record in which no accidents involving the use of these devices have occurred that have resulted in a member of the public being harmed. Increased use of firearms by less experienced and trained private individuals would probably occur under this alternative without WS being able to implement shooting where practical and effective, which would likely increase human safety risks somewhat. Similar to Alternatives 2 and 3, however, it is unlikely that these increased risks would become significant.

### **4.1.3.3 Effects on human health by nuisance birds for which BDM is requested by Alternative**

#### **Alternative 1 - Continue the Current Program (Proposed Action)**

As discussed in Chapter 1, feral domestic pigeons, European starlings, blackbirds, and English sparrows can all carry diseases that are transmittable to humans and that can adversely affect human health. In most cases, it is difficult to conclusively prove that birds were responsible for transmission of individual human cases or outbreaks of bird-borne diseases. Nonetheless, certain requesters of BDM service may consider this risk to be unacceptable and may request such service primarily for that reason. In such cases, BDM, either by lethal or nonlethal means, would, if successful, reduce the risk of bird-borne disease transmission at the site for which BDM is requested.

In some situations such as those involving urban feral domestic pigeons, the implementation of nonlethal controls such as electric or porcupine wires, netting barriers, etc. could actually increase the risk of human health problems at other sites by causing the birds to move to other urban roosting sites not previously affected. In such cases, lethal removal of the birds may actually be the best alternative from the standpoint of overall human health concerns in the local area.

Aside from human health concerns, another reason lethal removal may be a better alternative is that the costs of nonlethal exclusion would likely have to be borne at each new site where the displaced birds reestablished roosting and nesting habits. The costs of installing and maintaining nonlethal exclusion methods at multiple sites could be much greater, even over the long term, than the cost of periodic lethal control using DRC-1339.

### **Alternative 2 - Nonlethal BDM Only by WS**

Under this alternative, WS would be restricted to implementing only nonlethal methods in providing assistance with bird damage problems. Entities requesting BDM assistance for human health concerns would only be provided information on nonlethal barriers or exclusion devices, habitat alteration, or other nonlethal methods such as harassment. Because some of these nonlethal methods would likely be effective at the individual sites where they are used, this alternative would likely create or increase human health risks at other locations to where the birds would then move. Some requesting entities such as city government officials would reject WS assistance for this reason and would likely seek to achieve bird control (e.g., urban pigeon problems) by other means. Because DRC-1339 would not be available for use by non-WS personnel, it may be difficult to achieve local population reduction. In such cases, human health risks may remain the same or become worse. Also, under this alternative, human health problems would probably increase if private individuals were unwilling to implement nonlethal control methods because of high cost or lack of faith in their effectiveness, or if they were unable to hire other entities to conduct effective BDM for human health concerns.

### **Alternative 3 - Technical Assistance Only**

With WS technical assistance but no direct operational assistance, entities requesting BDM for human health concerns would either (1) not take any action which means the risk of human health problems would continue or would increase in each situation as pigeon numbers maintained or increased, (2) implement WS recommendations for nonlethal barriers and exclusions site-by-site, which would most probably result in pigeons relocating to other buildings and structures creating or increasing human health risks at new sites, or (3) undertake or hire pigeon control using cage traps, shooting, or Avitrol. DRC-1339 would not be available for use except by certified applicators under the direct supervision of WS personnel. Under this alternative, human health problems could increase if private individuals were unable to achieve effective BDM with technical assistance alone, or if they were unable to hire other entities to conduct effective BDM for human health concerns.

### **Alternative 4 - No Federal WS Bird Damage Management**

With no WS assistance, private individuals and community government officials would either (1) not take any action which means the risk of human health problems would continue or would increase in each situation as pigeon numbers maintained or increased, (2) implement nonlethal barriers and exclusions site-by-site, which would most probably result in pigeons relocating to other

buildings and structures creating or increasing human health risks at new sites, or (3) undertake or hire pigeon control using cage traps, shooting, or Avitrol. A primary difference between this alternative and the proposed action is that DRC-1339 would not be available. Under this alternative, human health problems could increase if private individuals were unable to find and implement effective means of controlling pigeons or other birds that cause similar types of nuisance problems.

#### **4.1.4 Effects on Aesthetics**

##### **4.1.4.1 Effects on Human Affectionate-Bonds with Individual Birds and on Aesthetic Values of Wild Bird Species**

###### **Alternative 1 - Continue the Current Program (Proposed Action)**

Some people who routinely view or feed individual birds such as feral domestic pigeons or urban waterfowl would likely be disturbed by removal of such birds under the current program. WS is aware of such concerns and has taken it into consideration in some cases to mitigate them. For example, in a recent situation involving coot damage to turf at a golf course, at least one adjacent homeowner who enjoyed viewing feral domestic ducks on one of the water course areas was concerned that WS would remove the ducks she was accustomed to seeing and feeding along with nuisance coots. WS agreed not to remove the ducks. This type of consideration can help to mitigate adverse effects on local peoples' enjoyment of certain individual birds or groups of birds.

Some people have expressed opposition to the killing of any birds during BDM activities. Under the current program, some lethal control of birds would continue and these persons would continue to be opposed. However, many persons who voice opposition have no direct connection or opportunity to view or enjoy the particular birds that would be killed by WS's lethal control activities. Lethal control actions would generally be restricted to local sites and to small, unsubstantial percentages of overall populations. Therefore, the species subjected to limited lethal control actions would remain common and abundant and would therefore continue to remain available for viewing by persons with that interest.

Some people do not believe that sandhill cranes, geese, or nuisance blackbird or starling roosts should even be harassed to stop or reduce damage problems. Some people who enjoy viewing wintering cranes and geese in the [REDACTED] would feel their interests are harmed by WS's nonlethal harassment program. Mitigating that impact, however, is the fact that overall numbers of wintering cranes and geese in the area are not diminished by the harassment program and people who like to view these species can still do so on State wildlife management areas and the [REDACTED] as well as numerous private property sites where the owners are not experiencing damage to the birds and are tolerant of their presence.

###### **Alternative 2 - Nonlethal BDM Only by WS**

Under this alternative, WS would not conduct any lethal BDM but would still conduct harassment of cranes and geese and other birds that were causing damage. Some people who oppose lethal control of wildlife by government but are tolerant of government involvement in nonlethal wildlife damage management would favor this alternative. Persons who have developed affectionate bonds with individual wild birds would not be affected by WS's activities under this alternative because

the individual birds would not be killed by WS. However, other private entities would likely conduct similar BDM activities as those that would no longer be conducted by WS which means the impacts would then be similar to the current program alternative.

### **Alternative 3 - Technical Assistance Only**

Under this alternative, WS would not conduct any direct operational BDM but would still provide technical assistance or self-help advice to persons requesting assistance with bird damage. WS would also not conduct any harassment of cranes and geese and other birds that were causing damage. Some people who oppose direct operational assistance in wildlife damage management by the government but favor government technical assistance would favor this alternative. Persons who have developed affectionate bonds with individual wild birds would not be affected by WS's activities under this alternative because the individual birds would not be killed by WS. However, other private entities would likely conduct similar BDM activities as those that would no longer be conducted by WS which means the impacts would then be similar to the current program alternative.

### **Alternative 4 - No Federal WS Bird Damage Management**

Under this alternative, WS would not conduct any lethal removal of birds nor would the program conduct any harassment of cranes, geese or other birds. Some people who oppose any government involvement in wildlife damage management would favor this alternative. Persons who have developed affectionate bonds with individual wild birds would not be affected by WS's activities any more under this alternative. However, other private entities would likely conduct similar BDM activities as those that would no longer be conducted by WS which means the impacts would then be similar to the current program alternative.

#### **4.1.4.2 Effects on Aesthetic Values of Property Damaged by Birds**

##### **Alternative 1 - Continue the Current Program (Proposed Action)**

Under this alternative, operational assistance in reducing nuisance pigeon and other bird problems in which droppings from the birds cause unsightly mess would improve aesthetic values of affected properties in the view of property owners and managers.

Relocation of nuisance roosting or nesting population of birds (e.g., blackbird/starling roosts, heron rookeries) by harassment can sometimes result in the birds causing the same or similar problems at the new location. If WS is providing direct operational assistance in relocating such birds, coordination with local authorities to monitor the birds' movements is generally conducted to assure they do not reestablish in other undesirable locations. This type of operational assistance has not occurred in NM, however.

##### **Alternative 2 - Nonlethal BDM Only by WS**

Under this alternative, WS would be restricted to nonlethal methods only. Nuisance pigeon problems would have to be resolved by nonlethal barriers and exclusion methods. Assuming property owners would choose to allow and pay for the implementation of these types of methods, this alternative would result in nuisance pigeons and other birds relocating to other sites where they would likely cause or aggravate similar problems for other property owners. Thus, this alternative

would most likely result in more property owners experiencing adverse effects on the aesthetic values of their properties than the current program alternative.

### **Alternative 3 - Technical Assistance Only**

Under this alternative, the lack of operational assistance in reducing nuisance pigeon and other bird problems would mean aesthetic values of some affected properties would continue to be adversely affected but this would not occur to as great a degree as under the No Program alternative. This is because some of these property owners would be able to resolve their problems by following WS's technical assistance recommendations.

Relocation of nuisance roosting or nesting population of birds (e.g., blackbird/starling roosts, heron rookeries) through harassment, barriers, or habitat alteration can sometimes result in the birds causing the same problems at the new location. If WS has only provided technical assistance to local residents or municipal authorities, coordination with local authorities to monitor the birds' movements to assure the birds do not reestablish in other undesirable locations might not be conducted. In such cases, limiting WS to technical assistance only could result in a greater chance of adverse impacts on aesthetics of property owners at other locations than the current program alternative.

### **Alternative 4 - No Federal WS Bird Damage Management**

Under this alternative, the lack of any operational or technical assistance in reducing nuisance pigeon and other bird problems in which droppings from the birds cause unsightly mess would mean aesthetic values of some affected properties would continue to be adversely affected if the property owners were not able to achieve BDM some other way. In many cases, this type of aesthetic "damage" would worsen because property owners would not be able to resolve their problems and bird numbers would continue to increase.

## **4.1.5 Humaneness of lethal bird control methods**

### **4.1.5.1 Alternative 1 - Continue the Current Program (Proposed Action)**

Under this alternative, methods viewed by some persons as inhumane would continue to be used in BDM by WS. These methods would include shooting and toxicants/chemicals such as DRC-1339 and Avitrol.

Shooting, when performed by experienced professionals, usually results in a quick death for target birds. Occasionally, however, some birds are initially wounded and must be shot a second time or must be caught by hand and then dispatched or euthanized. Some persons would view shooting as inhumane.

The primary lethal chemical BDM method that would be used by WS under this alternative would be DRC-1339. This chemical causes a quiet and apparently painless death that results from uremic poisoning and congestion of major organs (Decino et al. 1966). The birds become listless and lethargic, and a quiet death normally occurs in 24 to 72 hours following ingestion. However, the method appears to result in a less stressful death than that which probably occurs by most natural causes which are primarily disease, starvation, and predation. For these reasons, WS considers DRC-1339 use under the current program to be a relatively humane method of lethal BDM.

However, despite the apparent painlessness of the effects of this chemical, some persons will view any method that takes a number of hours to cause death as inhumane and unacceptable.

The chemical Avitrol repels birds by poisoning a few members of a flock, causing them to become hyperactive (see discussion in Appendix B). Their distress calls generally alarm the other birds and cause them to leave the site. Only a small number of birds need to be affected to cause alarm in the rest of the flock. The affected birds generally die. In most cases where Avitrol is used, only a small percentage of the birds are affected and killed by the chemical with the rest being merely frightened away. Some persons would view Avitrol as inhumane treatment of the birds that are affected by it based on the birds' distress behaviors.

Occasionally, birds captured alive by use of the tranquilizer Alpha-chlorolose, cage traps, or by hand or with nets would be euthanized. The most common method of euthanization would be by CO<sub>2</sub> gas which is an AVMA-approved euthanasia method. Most people would view AVMA-approved euthanization methods as humane.

#### **4.1.5.2 Alternative 2 - Nonlethal BDM Only by WS**

Under this alternative, lethal methods viewed as inhumane by some persons would not be used by WS. However, it is expected that many requesters of BDM assistance would reject nonlethal methods recommended by WS and/or would not be willing to pay the extra cost of implementing and maintaining them and would seek alternative lethal means.

Since DRC-1339 would not be available to non-WS entities, the only chemical BDM method that could be legally used by these entities would be Avitrol. Avitrol would most likely be viewed as less humane than DRC-1339 because of the distress behaviors that it causes.

Shooting could be used by non-WS entities and, similar to the current program alternative, would be viewed by some persons as inhumane.

Alpha-chlorolose would not be available to non-WS entities. However, live trapping/capture by other methods and euthanization by CO<sub>2</sub> gas could be used by these entities.

Overall, it is likely that BDM would actually be somewhat less humane with this alternative than under the current program alternative.

#### **4.1.5.3 Alternative 3 - Technical Assistance Only**

Under this alternative, WS would not conduct any lethal or nonlethal BDM, but would provide self-help advice only. Thus, lethal methods viewed as inhumane by some persons would not be used by WS.

Without WS direct operational assistance, it is expected that many requesters of BDM would reject nonlethal recommendations or would not be willing to pay the extra cost of implementing and maintaining them and would seek alternative lethal means.

Similar to Alternative 2, DRC-1339 would no longer be available for use since it is only registered for use by or under the direct supervision of WS personnel. Thus, the only chemical BDM method legally available would be Avitrol which would be viewed by many persons as less humane than



DRC-1339.

The other lethal method that would likely be used more by non-WS entities would be shooting which would also be viewed by some persons as inhumane.

Alpha-chlorolose would not be available to non-WS entities. However, live trapping/capture by other methods and euthanization by CO<sub>2</sub> gas could be used by these entities.

Overall, BDM under this alternative would likely be somewhat less humane than the current program alternative but slightly more humane than Alternative 2.

#### **4.1.5.4 Alternative 4 — No Federal WS Bird Damage Management**

Under this alternative, lethal methods viewed as inhumane by some persons would not be used by WS. However, it is expected that many requesters of BDM assistance would reject the use of nonlethal methods as being impractical or too expensive to implement and maintain and would seek alternative lethal means.

Similar to Alternative 2, DRC-1339 would no longer be available for use since it is only registered for use by or under the direct supervision of WS personnel. Thus, the only chemical BDM method legally available would be Avitrol which would be viewed by many persons as less humane than DRC-1339. In these situations, BDM would most likely be less humane than under the current program alternative.

Shooting could be used by non-WS entities and, similar to the current program alternative, would be viewed by some persons as inhumane.

Alpha-chlorolose would not be available to non-WS entities. However, live trapping/capture by other methods and euthanization by CO<sub>2</sub> gas could be used by these entities.

Overall, it is likely that BDM would actually be somewhat less humane with this alternative than under the current program alternative, somewhat less humane than under Alternative 2, and somewhat less humane than under Alternative 3.

Table 4-2 summarizes the expected impacts of each of the alternatives on each of the issues.

**Table 4-2. Relative Comparison of Anticipated Impacts From Alternatives.**

Issues/Impacts	<i>Alt. 1 Current Program</i>	<i>Alt. 2 Nonlethal Only</i>	<i>Alt. 3 Technical Assistance (TA) Only</i>	<i>Alt. 4 No Federal Program</i>
Target Species Impacts	Low impact - reductions in bird numbers would not significantly affect species populations.	Low impact - reductions in bird numbers would not occur or would also be insignificant.	Low impact - reductions in bird numbers may occur but would also be insignificant to populations.	Low impact - reductions in bird numbers less likely w/o WS assistance, but would be insignificant to populations if they occurred.
Impacts to Non-target Species	Low impact - methods used by WS would be highly selective with very little risk to nontarget species.	Low impact but greater than Alt. 1 - people with bird problems may resort to less selective lethal methods.if reject recommended nonlethal methods.	Low impact but greater than Alt. 1, but less than Alt. 2 - people with bird problems may resort to less selective lethal methods, but less likely with WS TA.	Low impact but greater than Alts. 1, 2, or 3 - people with bird problems may resort to less selective lethal methods w/o WS assistance.
Human Health and Safety - Risks of Adverse Effects from BDM Methods	Low risk - methods used by WS would be safe with no probable risk of human health or safety effects.	Low risk but slightly greater than Alt. 1 - people with bird problems may resort to illegal lethal chemical or other methods that pose human health/safety risks.	Low risk but slightly greater than Alt. 1, slightly less than Alt. 2 - people with bird problems may resort to illegal lethal or other chemical methods that pose human health/safety risks; less likely with WS TA.	Low risk but greater than Alts. 1, 2, 3 - people with bird problems may resort to illegal lethal chemical or other methods that pose human health/safety risks; most likely w/o WS direct or TA assistance.
Human Health and Safety - Risks of Adverse Effects from Bird Damage	Low risk - bird damage problems most likely to be resolved without creating or moving problems elsewhere.	Higher Risk - e.g., pigeons would move to other sites which can create health risks at new sites.	Higher Risk, but less than Alt. 2 - e.g., TA recipients might be able to achieve pigeon removal, but less likely w/o WS direct assistance.	Higher Risk than Alt. 1,2, but less than Alt. 3 - persons with BDM problems might be able to achieve success, but less likely w/o WS direct or TA assistance.
Aesthetic Enjoyment of Birds	Low to Moderate impact (at local levels only) - WS BDM does not adversely affect overall bird species populations but may be local reductions (e.g., feral pigeon BDM).	Low impact - bird numbers in BDM situations would remain high or would increase, unless nonlethal recommendations were rejected and bird numbers were reduced by non-WS entities.	Low impact (at local levels) - bird numbers in BDM situations would remain high or would increase unless TA recipients implemented lethal methods successfully.	Low impact - bird numbers in BDM situations would remain high or would increase unless bird numbers are reduced by non-WS entities.
Aesthetic Damage by Birds	Low impact - bird damage problems most likely to be resolved without creating or moving problems elsewhere.	Low to Moderate impact - e.g., pigeons would move to other sites which can create aesthetic damage problems at new sites.	High, greater than Alts. 1,2 less than Alt. 4 - nuisance bird problems less likely to be resolved w/o WS assistance.	High - nuisance bird problems less likely to be resolved w/o WS assistance.
Humaneness of Lethal BDM Methods	Low to Moderate impact - methods viewed by some people as inhumane would be used, but current program would still be largely nonlethal.	Lower impact than Alt. 1 - but some people with bird problems may resort to other, less selective lethal methods than those used by WS.	Lower impact than Alt. 1, but greater than Alt. 2 - some people with bird problems may resort to other, less selective methods, but less likely with WS TA assistance.	Lower impact than Alt. 1, 3 but greater than Alt. 2 - some people with bird problems may resort to other, less selective methods w/o WS direct or TA assistance.



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## APPENDIX A

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## Appendix B

### BIRD DAMAGE MANAGEMENT (BDM) METHODS AVAILABLE FOR USE OR RECOMMENDATION BY THE NEW MEXICO WILDLIFE SERVICES PROGRAM

#### NONLETHAL METHODS - NONCHEMICAL

**Agricultural producer and property owner practices.** These consist primarily of nonlethal preventive methods such as cultural methods and habitat modification. Cultural methods and other management techniques are implemented by the agricultural producer or property owners/managers. Resource owners/managers may be encouraged to use these methods, based on the level of risk, need, and professional judgement on their effectiveness and practicality. These methods include:

**Cultural methods.** These may include altering planting dates so that crops are not young and more vulnerable to damage when the damage-causing species is present, or the planting of crops that are less attractive or less vulnerable to such species (e.g., wintering sandhill cranes and geese in the [REDACTED]). At feedlots or dairies, cultural methods generally involve modifications to the level of care or attention given to livestock which may vary depending on the age and size of the livestock. Animal husbandry practices include but are not limited to techniques such as night feeding, indoor feeding, closed barns or corrals, removal of spilled grain or standing water, and use of bird proof feeders (Johnson and Glahn 1994). Increased feed size may reduce consumption by starlings but may not be cost effective for the producer (Twedt and Glahn 1984).

**Environmental/Habitat modification** can be an integral part of BDM. Wildlife production and/or presence is directly related to the type, quality, and quantity of suitable habitat. Therefore, habitat can be managed to reduce or eliminate the production or attraction of certain bird species or to repel certain birds. In most cases, the resource or property owner is responsible for implementing habitat modifications, and WS only provides advice on the type of modifications that have the best chance of achieving the desired effect. Habitat management is most often a primary component of BDM strategies at or near airports to reduce bird aircraft strike problems by eliminating bird nesting, roosting, loafing, or feeding sites. Generally, many bird problems on airport properties can be minimized through management of vegetation and water from areas adjacent to aircraft runways. Habitat management is often necessary to minimize damage caused by blackbirds and starlings that form large roosts during late autumn and winter. Bird activity can be greatly reduced at roost sites by removing all the trees or selectively thinning the stand. Roosts often will re-form at traditional sites, and substantial habitat alteration is sometimes the only way to permanently stop such activity at a site (USDA 1994).

**Animal behavior modification.** This refers to tactics that alter the behavior of wildlife to reduce damage. Animal behavior modification may involve use of scare tactics or fencing to deter or repel animals that cause loss or damage (Twedt and Glahn 1982). Some but not all methods that are included by this category are:

- Bird-proof barriers
- Electronic guards
- Propane exploders

- Pyrotechnics
- Distress Calls and sound producing devices
- Chemical frightening agents
- Repellents
- Scare crows
- Mylar tape
- Eye-spot balloons
- Harassment with a hovercraft
- Harassment with trained dogs

These techniques are generally only practical for small areas. Scaring devices such as distress calls, helium filled eye spot balloons, raptor effigies and silhouettes, mirrors, and moving disks can be effective but usually for only a short time before birds become accustomed and learn to ignore them (Schmidt and Johnson 1984, Bomford 1990, Rossbach 1975, Graves and Andelt 1987, Mott 1985, Shirota et al. 1983, Conover 1982, Arhart 1972 ). Mylar tape has produced mixed results in its effectiveness to frighten birds (Dolbeer et al. 1986, Tobin et al. 1988).

**Bird proof barriers** can be effective but are often cost-prohibitive, particularly because of the aerial mobility of birds which requires overhead barriers as well as peripheral fencing or netting. Exclusion adequate to stop bird movements can also restrict movements of livestock, people and other wildlife (Fuller-Perrine and Tobin 1993). Heavy plastic strips hung vertically in open doorways have been successful in some situations in excluding birds from buildings used for indoor feeding or housing of livestock (Johnson and Glahn 1994). Plastic strips, however, can prevent or substantially hinder the filling of feed troughs or feed platforms at livestock feeding facilities. Such strips can also be covered up when the feed is poured into the trough by the feed truck. They are not practical for open-air feedlot operations that are not housed in buildings.

Monofilament wires can effectively deter gull use of specific areas where they are causing a nuisance (Blokpoel 1976; Belant and Ickes 1996). The birds apparently fear colliding with the wires and thus avoid flying into areas where the method has been employed. The WS program in Washington has effectively utilized steel wires to deter gulls from preying on salmon fingerlings at the base of dams.

Porcupine wire (e.g., Nixalite™, Catclaw™) is a mechanical repellent method that can be used to exclude pigeons and other birds from ledges and other roosting surfaces (Williams and Corrigan 1994). The sharp points inflict temporary discomfort on the birds as they try to land which deters them from roosting. Drawbacks of this method are that some pigeons have been known to build nests on top of porcupine wires, and the method can be expensive to implement if large areas are involved. Electric shock bird control systems are available from commercial sources and, although expensive, can be effective in deterring pigeons and other birds from roosting on ledges, window sills and other similar portions of structures (Williams and Corrigan 1994).

**Auditory scaring devices** such as propane exploders, pyrotechnics, electronic guards, scare crows, and audio distress/predator vocalizations are effective in many situations for dispersing damage-causing bird species. These devices are sometimes effective but usually only for a short period of time before birds become accustomed and learn to ignore them (Schmidt and Johnson 1984, Bomford 1990, Rossbach 1975, Mott 1985, Shirota et.al. 1983, and Arhart 1972). Williams (1983) reported an approximate 50% reduction in blackbirds at two south Texas feedlots as a result of pyrotechnics and propane cannon use. However, they are often not practical in dairy or feedlot situations because of the disturbance to livestock, although livestock can generally be expected to habituate to the noise. Birds, too, quickly learn to ignore scaring devices if the birds' fear of the methods is not reinforced with shooting or other tactics.

**Visual scaring techniques** such as use of mylar tape (highly reflective surface produces flashes of light that startles

birds), eye-spot balloons (the large eyes supposedly give birds a visual cue that a large predator is present), flags, effigies (scarecrows), sometimes are effective in reducing bird damage. Mylar tape has produced mixed results in its effectiveness to frighten birds (Dolbeer et.al. 1986, and Tobin et.al. 1988). Birds quickly learn to ignore visual and other scaring devices if the birds' fear of the methods is not reinforced with shooting or other tactics.

**Relocation** of damaging birds to other areas following live capture generally would not be effective nor cost-effective. Relocation to other areas following live capture would not generally be effective because problem bird species are highly mobile and can easily return to damage sites from long distances, habitats in other areas are generally already occupied, and relocation would most likely result in bird damage problems at the new location. Translocation of wildlife is also discouraged by WS policy (WS Directive 2.501) because of stress to the relocated animal, poor survival rates, and difficulties in adapting to new locations or habitats.

However, there are exceptions to the rule for relocating birds. Relocation of damaging birds might be a viable solution and acceptable to the public when the birds were considered to have high value such as migratory waterfowl, raptors, or T&E species. In these cases, WS would consult with the USFWS and/or NMGF to coordinate capture, transportation, and selection of suitable relocation sites.

**Nest destruction** is the removal of nesting materials during the construction phase of the nesting cycle. Nest destruction is generally only applied when dealing with a single bird or very few birds. This method is used to discourage birds from constructing nests in areas which may create nuisances for home and business owners. Heusmann and Bellville (1978) reported that nest removal was an effective but time-consuming method because problem bird species are highly mobile and can easily return to damage sites from long distances, or because of high populations. This method poses no imminent danger to pets or the public.

#### **Live traps include:**

**Clover, funnel, and common pigeon traps** are enclosure traps made of nylon netting or hardware cloth and come in many different sizes and designs, depending on the species of birds being captured. The entrance of the traps also vary greatly from swinging-door, one-way door, funnel entrance, to tip-top sliding doors. Traps are baited with grains or other food material which attract the target birds. WS' standard procedure when conducting pigeon trapping operations is to ensure that an adequate supply of food and water is in the trap to sustain captured birds for several days. Active traps are checked daily, every other day, or as appropriate, to replenish bait and water and to remove captured birds.

**Decoy traps** are used by WS for preventive and corrective damage management. Decoy traps are similar in design to the Australian Crow Trap as reported by Johnson and Glahn (1994) and McCracken (1972). Live decoy birds of the same species that are being targeted are usually placed in the trap with sufficient food and water to assure their survival. Perches are configured in the trap to allow birds to roost above the ground and in a more natural position. Feeding behavior and calls of the decoy birds attract other birds which enter and become trapped themselves. Active decoy traps are monitored daily, every other day, or as appropriate, to remove and euthanize excess birds and to replenish bait and water. Decoy traps and other cage/live traps, as applied and used by WS, pose no danger to pets or the public and if a pet is accidentally captured in such traps, it can be released unharmed.

**Nest box traps** may be used by WS for corrective damage management and are effective in capturing local breeding and post breeding starlings and other targeted secondary cavity nesting birds (DeHaven and Guarino 1969, Knittle and Guarino 1976). Nest box traps are effective in capturing local breeding and post breeding starlings in limited areas (DeHaven and Guarino 1969; Knittle and Guarino 1976). Trapped birds

are euthanized. Relocation to other areas following live capture would not generally be effective because problem bird species are highly mobile and can easily return to damage sites from long distances, habitats in other areas are generally already occupied, and relocation would most likely result in bird damage problems at the new location. Translocation of wildlife is also discouraged by WS policy (WS Directive 2.501) because of stress to the relocated animal, poor survival rates, and difficulties in adapting to new locations or habitats.

**Mist nets** are more commonly used for capturing small-sized birds such as house sparrows, finches, etc. but can be used to capture larger birds such as ducks and ring-neck pheasants or even smaller nuisance hawks and owls. It was introduced in to the United States in the 1950's from Asia and the Mediterranean where it was used to capture birds for the market (Day et al. 1980). The mist net is a fine black silk or nylon net usually 3 to 10 feet wide and 25 to 35 feet long. Net mesh size determines which birds can be caught and overlapping "pockets" in the net cause birds to entangle themselves when they fly into the net.

**Cannon nets** are normally used for larger birds such as pigeons, feral ducks, and waterfowl and use mortar projectiles to propel a net up and over birds which have been baited to a particular site. This type of net is especially effective for waterfowl that are flightless due to molting and other birds which are typically shy to other types of capture.

**Bal-chatri traps** are small traps used for capturing birds of prey such as hawks and eagles. Live bait such as pigeons, starlings, rodents, etc. are used to lure raptors into landing on the trap (Hygnstrom and Craven 1994) where nylon nooses entangle their feet and hold the bird. The trap is made of chicken wire or other wire mesh material which is formed into a Quonset hut-shaped cage that holds the live bait. The outside top and sides are covered with many nooses consisting of strong monofilament line or stiff nylon string.

**Lure crops/alternate foods.** When depredations cannot be avoided by careful crop selection or modified planting schedules, lure crops can sometimes be used to mitigate the loss potential. Lure crops are planted or left for consumption by wildlife as an alternative food source. This approach provides relief for critical crops by sacrificing less important or specifically planted fields. Establishing lure crops is sometimes expensive, requires considerable time and planning to implement, and may attract other unwanted species to the area. This method is part of the integrated BDM strategy for reducing crop damage by sandhill cranes and geese in the [REDACTED]. Lure crops are planted and managed by the USFWS at [REDACTED] and by the New Mexico Department of Game and Fish at state game refuges in the area.

## NONLETHAL METHODS - CHEMICAL

**Methyl anthranilate** (artificial grape flavoring used in foods and soft drinks for human consumption) could be used or recommended by WS as a bird repellent. Methyl anthranilate (MA) (artificial grape flavoring food additive) has been shown to be an effective repellent for many bird species, including waterfowl (Dolbeer et al. 1993). Methyl anthranilate (MA) is also under investigation as a potential bird taste repellent. MA may become available for use as a livestock feed additive (Mason et.al. 1984; 1989). It is registered for applications to turf or to surface water areas used by unwanted birds. The material has been shown to be nontoxic to bees ( $LD_{50} > 25$



micrograms/bee<sup>5</sup>), nontoxic to rats in an inhalation study ( $LC_{50} > 2.8 \text{ mg/L}$ <sup>6</sup>), and of relatively low toxicity to fish and other invertebrates. Methyl anthranilate is naturally occurring in concord grapes and in the blossoms of several species of flowers and is used as a food additive and perfume ingredient (Dolbeer et al. 1992; RJ Advantage, Inc. 1997). It has been listed as “Generally Recognized as Safe” (GRAS) by the U.S. Food and Drug Administration (Dolbeer et al. 1992).

Water surface and turf applications of MA are generally considered expensive. For example, the least intensive application rate required by label directions is 20 lbs. of product (8 lbs. active ingredient) per acre of surface water at a cost of about \$64/lb. with retreating required every 3-4 weeks (RJ Advantage, Inc. 1997). An example of the level of expense involved is a golf course in [REDACTED], NM where it was estimated that treating four watercourse areas would cost in excess of \$25,000 per treatment for material alone. Cost of treating turf areas would be similar on a per acre basis. Also, MA completely degrades in about 3 days when applied to water (RJ Advantage, Inc. 1997) which indicates the repellent effect is short-lived.

Another potentially more cost effective method of MA application is by use of a fog-producing machine (Vogt 1997). The fog drifts over the area to be treated and is irritating to the birds while being nonirritating to any humans that might be exposed. Fogging applications must generally be repeated 3-5 times after the initial treatment before the birds abandon a treatment site (Dr. P. Vogt, RJ Advantage, Inc., pers. comm. 1997). Applied at a rate of about .25 lb./ acre of water surface, the cost is considerably less than when using the turf or water treatment methods. However, the fogging method is currently not registered for use in New Mexico and therefore cannot legally be used to meet the goals of the proposed action.

MA is also being investigated as a livestock feed additive to reduce or prevent feed consumption by birds. Such chemicals undergo rigorous testing and research to prove safety, effectiveness, and low environmental risks before they would be registered by U.S. Environmental Protection Agency (EPA) or the Food and Drug Administration (FDA).

**Particulate feed additives** have been investigated for their bird-repellent characteristics. In pen trials, starlings rejected grain to which charcoal particles were adhered (L. Clark, National Wildlife Research Center, pers. comm. 1999). If further research finds this method to be effective and economical in field application, it might become available as a bird repellent on livestock feed. Charcoal feed additives have been explored for use in reducing methane production in livestock and should have no adverse effects on livestock, on meat or milk production, or on human consumers of meat or dairy products (L. Clark, NWRC, pers. comm. 1999).

**Other chemical repellents.** A number of other chemicals have shown bird repellent capabilities. Anthraquinone, a naturally occurring chemical found in many plant species and in some invertebrates as a natural predator defense mechanism, has shown effectiveness in protecting rice seed from red-winged blackbirds and boat-tailed grackles (Avery et al. 1997). It has also shown effectiveness as a foraging repellent against Canada goose grazing on turf and as a seed repellent against brown-headed cowbirds (Dolbeer et al. 1998). This chemical is not yet registered in the U.S. but may become available at some future date. Compounds extracted from common spices used in cooking and applied to perches in cage tests have been shown repellent characteristics against roosting starlings (Clark 1997). Naphthalene (moth balls) was found to be ineffective in repelling starlings (Dolbeer et al. 1988).

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<sup>5</sup> An  $LD_{50}$  is the dosage in milligrams of material per kilogram of body weight, or, in this case in micrograms per individual bee, required to cause death in 50% of a test population of a species.

<sup>6</sup> An  $LC_{50}$  is the dosage in milligrams of material per liter of air required to cause death in 50% of a test population of a species through inhalation.

**Tactile repellents.** A number of tactile repellent products are on the market which reportedly deter birds from roosting on certain structural surfaces by presenting a tacky or sticky surface that the birds avoid. However, experimental data in support of this claim are sparse (Mason and Clark 1992). The repellancy of tractile products is generally short-lived because of dust, and they sometimes cause aesthetic problems and expensive clean-up costs by running down the sides of buildings in hot weather.

**Avitrol** is a chemical frightening agent (repellent) that is effective in a single dose when mixed with untreated baits, normally in a 1:9 ratio. Avitrol, however, is not completely nonlethal in that a small portion of the birds are generally killed (Johnson and Glahn 1994). Prebaiting is usually necessary to achieve effective bait acceptance by the target species. This chemical is registered for use on pigeons, crows, gulls, blackbirds, starlings, and English sparrows in various situations. Avitrol treated bait is placed in an area where the targeted birds are feeding and usually a few birds will consume a treated bait and become affected by the chemical. The affected birds then broadcast distress vocalizations and display abnormal flying behavior, thereby frightening the remaining flock away.

Avitrol is a restricted use pesticide that can only be sold to certified applicators and is available in several bait formulations where only a small portion of the individual grains carry the chemical. It can be used during anytime of the year, but is used most often during winter and spring. Any granivorous bird associated with the target species could be affected by Avitrol. Avitrol is water soluble, but laboratory studies demonstrated that Avitrol is strongly absorbed onto soil colloids and has moderately low mobility. Biodegradation is expected to be slow in soil and water, with a half-life ranging from three to 22 months. However, Avitrol may form covalent bonds with humic materials, which may serve to reduce its availability for intake by organisms from water, is nonaccumulative in tissues and rapidly metabolized by many species (Schafer 1991).

Avitrol is acutely toxic to avian and mammalian species, however, blackbirds are more sensitive to the chemical and there is little evidence of chronic toxicity. Laboratory studies with predator and scavenger species have shown minimal potential for secondary poisoning, and during field use only magpies and crows appear to have been affected (Schafer 1991). However, a laboratory study by Schafer et al. (1974) showed that magpies exposed to two to 3.2 times the published Lethal Dose (LD<sub>50</sub>) in contaminated prey for 20 days were not adversely affected and three American kestrels that were fed contaminated blackbirds for seven to 45 days were not adversely affected. A formal Risk Assessment found no probable risk is expected for pets and the public, based on low concentrations and low hazards quotient value for nontarget indicator species tested on this compound (USDA 1994, Appendix P).

Avitrol use in the NM WS program has been extremely limited — only 12 sites were treated using a total of only 33 oz. of Avitrol mixed bait (total active ingredient was 0.165 oz.).

**Alpha-chloralose** is a central nervous system depressant used as an immobilizing agent to capture and remove nuisance waterfowl and other birds. It is labor intensive and in some cases, may not be cost effective (Wright 1973, Feare et al. 1981), but is typically used in recreational and residential areas, such as swimming pools, shoreline residential areas, golf courses, or resorts. Alpha-chloralose is typically delivered as a well contained bait in small quantities with minimal hazards to pets and humans; single bread or corn baits are fed directly to the target birds. WS personnel are present at the site of application during baiting to retrieve the immobilized birds. Unconsumed baits are removed from the site following each treatment. Alpha-chloralose was eliminated from more detailed analysis in USDA (1994) based on critical element screening, therefore, environmental fate properties of this compound were not rigorously assessed. However, the solubility and mobility are believed to be moderate and environmental persistence is believed to be low. Bioaccumulation in plants and animal tissue is believed to be low. Alpha-chloralose is used in other countries as an avian and mammalian toxicant. The compound is slowly metabolized, with recovery occurring a few hours after administration (Schafer 1991). The dose used for immobilization is designed to be about two to 30 times lower than the LD<sub>50</sub>. Mammalian data

indicate higher LD<sub>50</sub> values than birds. Toxicity to aquatic organisms is unknown (Woronecki et al. 1990) but the compound is not generally soluble in water and therefore should remain unavailable to aquatic organisms. Factors supporting the determination of this low potential included the lack of exposure to pets, nontarget species and the public, and the low toxicity of the active ingredient. Other supporting rationale for this determination included relatively low total annual use and a limited number of potential exposure pathways. The agent is currently approved for use by WS as an Investigative New Animal Drug by the FDA rather than a pesticide.

## LETHAL METHODS - MECHANICAL

**Egg addling/destruction** is a method of suppressing reproduction in local nuisance bird populations by destroying egg embryos prior to hatching. Egg addling is conducted by vigorously shaking an egg numerous times which causes detachment of the embryo from the egg sac. Egg destruction can be accomplished in several different ways, but the most commonly used methods are manually gathering eggs and breaking them, or by oiling or spraying the eggs with a liquid which covers the entire egg and prevents the egg from obtaining oxygen (see *Egg oiling* below). Although WS does not commonly use egg addling or destruction, it is a valuable damage management tool and has shown to be effective.

**Shooting** is more effective as a dispersal technique than as a way to reduce bird densities when large number of birds are present. Normally shooting is conducted with shotguns or air rifles. Shooting is a very individual specific method and is normally used to remove a single offending bird. However, at times, a few birds could be shot from a flock to make the remainder of the birds more wary and to help reinforce nonlethal methods. Shooting can be relatively expensive because of the staff hours sometimes required (USDA 1994). It is selective for target species and may be used in conjunction with the use of spotlights, decoys, and calling. Shooting with shotguns, air rifles, or rim and center fire rifles is sometimes used to manage bird damage problems when lethal methods are determined to be appropriate. The birds are killed as quickly and humanely as possible. All firearm safety precautions are followed by WS when conducting BDM activities and all laws and regulations governing the lawful use of firearms are strictly complied with.

Firearm use is very sensitive and a public concern because of safety issues relating to the public and misuse. To ensure safe use and awareness, WS employees who use firearms to conduct official duties are required to attend an approved firearms safety and use training program within 3 months of their appointment and a refresher course every 3 years afterwards (WS Directive 2.615). WS employees who carry firearms as a condition of employment, are required to sign a form certifying that they meet the criteria as stated in the *Lautenberg Amendment* which prohibits firearm possession by anyone who has been convicted of a misdemeanor crime of domestic violence.

**Sport hunting** is sometimes recommended by WS as a viable damage management method when the target species can be legally hunted. A valid hunting license and other licenses or permits may be required by the IDFG and USFWS for certain species. This method provides sport and food for hunters and requires no cost to the landowner. Sport hunting is occasionally recommended if it can be conducted safely for pigeon damage management around feedlots and dairies and for greater sandhill cranes, Canada geese, and other damage causing waterfowl.

**Snap traps** are modified rat snap traps used to remove individual woodpeckers, starlings, and other cavity use birds. The trap treadle is baited with peanut butter or other taste attractants and attached near the damage area caused by the woodpecker. These traps pose no imminent danger to pets or the public.

## LETHAL METHODS - CHEMICAL

All chemicals used by WS are registered as required by the Federal Insecticide, Fungicide, and Rodenticide Act

(FIFRA) (administered by the EPA and the New Mexico Department of Agriculture (NMDA)) or by the FDA. WS personnel that use restricted-use chemical methods are certified as pesticide applicators by NMDA and are required to adhere to all certification requirements set forth in FIFRA and New Mexico pesticide control laws and regulations. Chemicals are only used on private, public, or tribal property sites with authorization from the property owner/manager.

**CO<sub>2</sub>** is sometimes used to euthanize birds which are captured in live traps and when relocation is not a feasible option. Live birds are placed in a container such as a plastic 5-gallon bucket or chamber and sealed shut. CO<sub>2</sub> gas is released into the bucket or chamber and birds quickly die after inhaling the gas. This method is approved as a euthanizing agent by the American Veterinary Medical Association. CO<sub>2</sub> gas is a byproduct of animal respiration, is common in the atmosphere, and is required by plants for photosynthesis. It is used to carbonate beverages for human consumption and is also the gas released by dry ice. The use of CO<sub>2</sub> by WS for euthanasia purposes is exceedingly minor and inconsequential to the amounts used for other purposes by society.

**Egg oiling** is method of suppressing reproduction of nuisance birds by spraying a small quantity of food grade vegetable oil or mineral oil on eggs in nests. The oil prevents exchange of gases and causes asphyxiation of developing embryos and has been found to be 96-100% effective in reducing hatchability. (Pochop 1998; Pochop et al. 1998). The method has an advantage over nest or egg destruction in that the incubating birds generally continue incubation and do not renest. The EPA has ruled that use of corn oil for this purpose is exempt from registration requirements under FIFRA. The New Mexico Pesticide Control Act, however, requires the method to be registered for use in New Mexico. To be most effective, the oil should be applied anytime between the fifth day after the laying of the last egg in a nest and at least five days before anticipated hatching. This method is extremely target specific and is less labor intensive than egg addling.

**DRC-1339** is the principal chemical method that would be used for starling/blackbird and pigeon damage management in the proposed action. For more than 30 years, DRC-1339 has proven to be an effective method of starling, blackbird, gull, and pigeon control at feedlots, dairies, airports, and in urban areas (West et al. 1967, Besser et al. 1967, Decino et al. 1966). Studies continue to document the effectiveness of DRC-1339 in resolving blackbird starling problems at feedlots (West and Besser 1976, Glahn 1982, Glahn et al. 1987), and Blanton et al. (1992) reports that DRC-1339 appears to be a very effective, selective, and safe means of urban pigeon population reduction. Glahn and Wilson (1992) noted that baiting with DRC-1339 is a cost-effective method of reducing damage by blackbirds to sprouting rice.

DRC-1339 is a slow acting avicide that is registered with the EPA for reducing damage from several species of birds, including blackbirds, starlings, pigeons, crows, ravens, magpies, and gulls. DRC-1339 was developed as an avicide because of its differential toxicity to mammals. DRC-1339 is highly toxic to sensitive species but only slightly toxic to nonsensitive birds, predatory birds, and mammals. For example, starlings, a highly sensitive species, require a dose of only 0.3 mg/bird to cause death (Royall et al. 1967). Most bird species that are responsible for damage, including starlings, blackbirds, pigeons, crows, magpies, and ravens are highly sensitive to DRC-1339. Many other bird species such as raptors, sparrows, and eagles are classified as nonsensitive. Numerous studies show that DRC-1339 poses minimal risk of primary poisoning to nontarget and T&E species (USDA 1994). Secondary poisoning has not been observed with DRC-1339 treated baits. During research studies, carcasses of birds which died from DRC-1339 were fed to raptors and scavenger mammals for 30 to 200 days with no symptoms of secondary poisoning observed (Cunningham et al. 1981). This can be attributed to relatively low toxicity to species that might scavenge on blackbirds and starlings killed by DRC-1339 and its tendency to be almost completely metabolized in the target birds which leaves little residue to be ingested by scavengers. Secondary hazards of DRC-1339 are almost nonexistent. DRC-1339 acts in a humane manner producing a quiet and apparently painless death.

DRC-1339 is unstable in the environment and degrades rapidly when exposed to sunlight, heat, or ultra violet radiation. DRC-1339 is highly soluble in water but does not hydrolyze and degradation occurs rapidly in water. DRC-1339 tightly binds to soil and has low mobility. The half life is about 25 hours, which means it is nearly 100% broken down within a week, and identified metabolites (i.e., degradation chemicals) have low toxicity. Aquatic and invertebrate toxicity is low (USDA 1994). Appendix P of USDA (1994) contains a thorough risk assessment of DRC-1339 and the reader is referred to that source for a more complete discussion. That assessment concluded that no adverse effects are expected from use of DRC-1339.

DRC 1339 has several EPA Registration Labels (56228-10, 56228-17, 56228-28, 56228-29, and 56228-30) depending on the application or species involved in the BDM project. New Mexico WS used or supervised the use of an average of 595 grams (1.3 pounds) of DRC-1339 per year for the past 3 years (Table C-1). All were applied on private lands for reduction of damage by pigeons (81%), common ravens 17%, and blackbirds/starlings (3%) (data from WS Management Information System). This use of DRC-1339 was addressed in WS' Predator EAs for the Albuquerque, Las Cruces, and Roswell WS Districts of New Mexico (USDA 1997a; 1997b; 1997c).

**Table C-1. DRC-1339 Used by New Mexico WS.**

FY	EPA Reg.	Species	Quantity Used (grams)
1998	56228-10	Blackbirds/Starlings	1
	56228-28	Pigeons	521
	56228-29	Common ravens	150
1997	56228-10	Blackbirds/Starlings	0
	56228-28	Pigeons	397
	56228-29	Common ravens	146
1996	56228-10	Blackbirds/Starlings	50
	56228-28	Pigeons	521
	56228-29	Common ravens	0

\* During FY 97 and 98, DRC-1339 was used to reduce raven damage to livestock. Those actions are covered by EAs for Predator Damage Management in the Albuquerque, Las Cruces, and Roswell WS Districts of New Mexico (USDA 1997a; 1997b; 1997c).



## **FINDING OF NO SIGNIFICANT IMPACT AND DECISION FOR BIRD DAMAGE MANAGEMENT IN NEW MEXICO**

The U.S. Department of Agriculture, Animal and Plant Health Inspection Service (USDA-APHIS), Wildlife Services (WS) program responds to a variety of requests for assistance from individuals, organizations and agencies experiencing damage caused by a number of wild bird species in New Mexico. Ordinarily, according to APHIS procedures implementing the National Environmental Policy Act (NEPA), individual wildlife damage management actions are categorically excluded (7 CFR 372.5(c), 60 Fed. Reg. 6000-6003, 1995). In order to facilitate planning, interagency coordination, and the streamlining of program management, and to clearly communicate with the public the analysis of cumulative impacts from WS's planned and proposed program, an environmental assessment (EA) was prepared. The predecisional EA released by WS in August 1999 documented the need for bird damage management (BDM) in New Mexico and assessed potential impacts of various alternatives for responding to bird damage problems.

WS's proposed action was to continue the current program that uses the full range of bird damage management methods currently authorized by state and federal law.

### **Public Involvement**

A predecisional EA was prepared and released to the public for a 30-40 day comment period. Notice of availability of the predecisional EA was published in the Albuquerque Journal and Albuquerque Tribune (statewide circulation) and in nine other more local newspapers around the state beginning on August 20-22 and ending on August 22-25, 1999. In addition, the predecisional EA was mailed to 14 environmental and animal protection organizations, 25 American Indian Tribes, and 13 representatives of 7 different agencies with known jurisdiction or presumed interest in bird damage management issues. Only two comment letters were received in response to the predecisional EA, both from the U.S. Fish and Wildlife Service, and both expressing support for the current program alternative. Several minor editorial changes suggested by these commenters have been made to the EA which is now available in final form.

### **Major Issues**

Public comments and input on past WS's bird damage management activities identified several issues deemed relevant to the scope of this EA. These issues were consolidated into the following 5 primary issues to be considered in detail:

1. Effects on Target Bird Species Populations
2. Effects on Nontarget Species populations, including T&E Species
3. Effects on Human Health and Safety (Safety and efficacy of chemical control methods; Impacts on human safety of nonchemical BDM methods; Impacts on human safety of not conducting BDM to reduce disease outbreaks and bird strike hazards at airports)
4. Effects on Aesthetics (Effects on Human Affectionate-Bonds with Individual Birds and on Aesthetic Values of Wild Bird Species; Effects on Aesthetic Values of Property Damaged by Birds)
5. Humaneness and Animal Welfare Concerns of Methods Used by WS.

In addition to the identified major issues considered in detail, ten other issues were considered but not in detail.

### **Alternatives Analyzed in Detail**

Four potential alternatives were developed to address the issues identified above. Four additional alternatives were considered but not analyzed in detail. A detailed discussion of the anticipated effects of the alternatives on each issue considered in detail is described in Chapter 4 of the EA. The following summary provides a brief description of each alternative and its anticipated impacts.



**Alternative 1. Continuation of Current Program (No Action).** Consideration of the No Action alternative is required under 40 CFR 1502.14(d), and provides a baseline for comparing the potential effects of all the other alternatives. This alternative consists of continuing the current program which uses currently available methods of BDM as described in the EA in an integrated approach to resolve bird damage problems in the State. Alternative 1 benefits individual resource owners/managers and provides benefits to public health, while resulting in very low risk of adverse impact on native wildlife populations or T&E species, and very low risks of adverse impacts to public health or safety. Beneficial effects appear to outweigh the risk of adverse effects on aesthetics. Currently used methods are highly selective for target species and appear to present a balanced approach to the issues of humaneness and aesthetics when all facets of these issues are considered.

**Alternative 2. Nonlethal BDM Only.** This alternative would allow no use of lethal methods by WS as described under the proposed action. The current nonlethal Middle Rio Grande Valley crane and goose damage management program would remain the same as under the current program alternative. Individual resource owners or managers and state agencies would still have the option of implementing some lethal control measures. Alternative 2 would provide lower benefits to individual resource owners/managers and lower benefits to public health than the current program, while potentially resulting in greater risk of adverse impact on native wildlife populations or T&E species, and increased risk of adverse impacts to public health or safety. Adverse effects would probably outweigh beneficial effects on aesthetics. Persons opposed to lethal control would view this alternative as more humane than the current program, but actual impact on humaneness could be more adverse than the current program.

**Alternative 3. Technical Assistance Only.** Under this alternative, WS would not provide any direct control assistance to persons experiencing bird damage problems, but would instead provide only advice, recommendations, and limited technical supplies and equipment. WS's involvement in the current operational nonlethal [REDACTED] crane and goose damage management program would end under this alternative. Alternative 3 would provide lower benefits to individual resource owners/managers and lower benefits to public health than the current program but greater benefits in these areas than Alternative 2. Alternative 3 would potentially result in greater risk of adverse impact on native wildlife populations or T&E species than the current program but less impact on these issues than Alternative 2. Alternative 3 would result in increased risk of adverse impacts to public health or safety than the current program, but less than Alternative 2. Adverse effects on aesthetics would probably outweigh the beneficial effects on that issue. Although persons opposed to lethal control would view this alternative as more humane than the current program, actual impact on humaneness could be more adverse than the current program and somewhat less adverse than Alternative 2.

**Alternative 4. No Federal WS Bird Damage Management.** This alternative would consist of no involvement by WS in BDM in New Mexico -- neither direct operational management assistance nor technical assistance to provide information on nonlethal and/or lethal management techniques would be available from WS. Alternative 4 would provide much lower benefits to individual resource owners/managers and lower benefits to public health than the current program or any other alternative. Alternative 4 would potentially result in greater risk of adverse impact on native wildlife populations, T&E species, and public health and safety than any of the other alternatives. Adverse effects on aesthetics would probably outweigh the beneficial effects on that issue. Although persons opposed to lethal control would view this alternative as more humane than the current program, actual impact on humaneness could be more adverse than the other alternatives, including the current program alternative.

**Alternatives considered but not analyzed in detail were:**

1. **Lethal BDM Only By WS.** Under this alternative, WS would not conduct any nonlethal control of birds for BDM purposes in the State, but would only conduct lethal BDM. This alternative was eliminated from further analysis because many bird damage problems can be resolved effectively through nonlethal means and restricting the program to lethal means only would not be supported by major cooperating agencies.
2. **Compensation for Bird Damage Losses.** The Compensation alternative would require the establishment of a system to reimburse persons impacted by bird damage. This alternative was eliminated from further analysis because no federal or state laws currently exist to authorize such action, because it would not be practical for resolving bird caused threats to human health and safety, and because of other drawbacks discussed in the EA and the WS FEIS.
3. **Short Term Eradication and Long Term Population Suppression.** An eradication alternative would direct all WS program efforts toward total long term elimination of damaging bird species within large defined areas or across the entire State. This alternative was eliminated from further analysis because all federal and state agencies with jurisdiction over or interest in bird management oppose eradication of any native wildlife species, and because it is generally impossible to achieve. Long term population suppression is not a desired goal of the NMGF, FWS, or WS for the State as a whole but could be implemented for localized areas prone to certain types of bird damage under the current program alternative. The impacts of localized population suppression are analyzed in the EA.
4. **Use of bird-proof feeders in lieu of lethal control at dairies and cattle feeding facilities.** This alternative would require that WS install or require use of bird-proof feeders at dairies and cattle feeding facilities in place of any and all lethal BDM



activities at such sites. This alternative was eliminated from further analysis because of concerns raised by experts consulted by WS as described in the EA and because the use of such feeders can already be recommended by WS under the current program alternative if determined to be practical and effective.

### **Finding of No Significant Impact**

The analysis in the EA indicates that there will not be a significant impact, individually or cumulatively, on the quality of the human environment as a result of implementing the proposed action. I agree with this conclusion and therefore find that an EIS need not be prepared. This determination is based on the following factors:

1. Bird damage management, as proposed by WS in New Mexico, is not regional or national in scope.
2. The proposed action would pose minimal risk to public health and safety. No injuries to any member of the public are known to have resulted from WS activities in the State. Beneficial impacts on health and safety would outweigh risk of adverse impacts.
3. There are no unique characteristics such as park lands, prime farm lands, wetlands, wild and scenic areas, or ecologically critical areas that would be significantly affected.
4. The effects on the quality of the human environment are not highly controversial. Although there is some opposition to certain methods of bird control, this action is not highly controversial in terms of size, nature, or effect.
5. Based on the analysis documented in the EA, the effects of the proposed bird damage management program on the human environment would not be significant. The effects of the proposed activities are not highly uncertain and do not involve unique or unknown risks.
6. The proposed action would not establish a precedent for any future action with significant effects.
7. No significant cumulative effects on the quality of the human environment were identified through this assessment.
8. The proposed activities would not affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places, nor would they likely cause any loss or destruction of significant scientific, cultural, or historical resources.
9. An evaluation of the proposed action and its effects on T&E species determined that no significant adverse effects would occur to such species.
10. The proposed action would be in compliance with all Federal, State, and local laws imposed for the protection of the environment.

### **Decision**

I have carefully reviewed the EA and the input resulting from the public involvement process. I believe the issues and objectives identified in the EA would be best addressed through implementation of Alternative 1 (continuing the current program). Alternative 1 is therefore selected because (1) it offers the greatest chance at maximizing effectiveness and benefits to resource owners and managers while minimizing cumulative impacts on the quality of the human environment that might result from the program's effect on target and nontarget species populations; (2) it presents the greatest chance of maximizing net benefits to public health and safety; and, (3) it offers a balanced approach to the issues of humaneness and aesthetics when all facets of these issues are considered. The WS BDM program in New Mexico will continue to emphasize an Integrated Wildlife Damage Management Approach in compliance with all the applicable mitigation measures listed in Chapter 3 of the EA.

For additional information regarding this decision, please contact Gary Littauer, Environmental Coordinator/Assistant State Director, 2113 Osuna Road NE, Suite B, Albuquerque, NM 87113, telephone (505) 346-2640.

/s/

10/19/99

Michael V. Worthen, Regional Director  
APHIS-WS Western Region

Date

